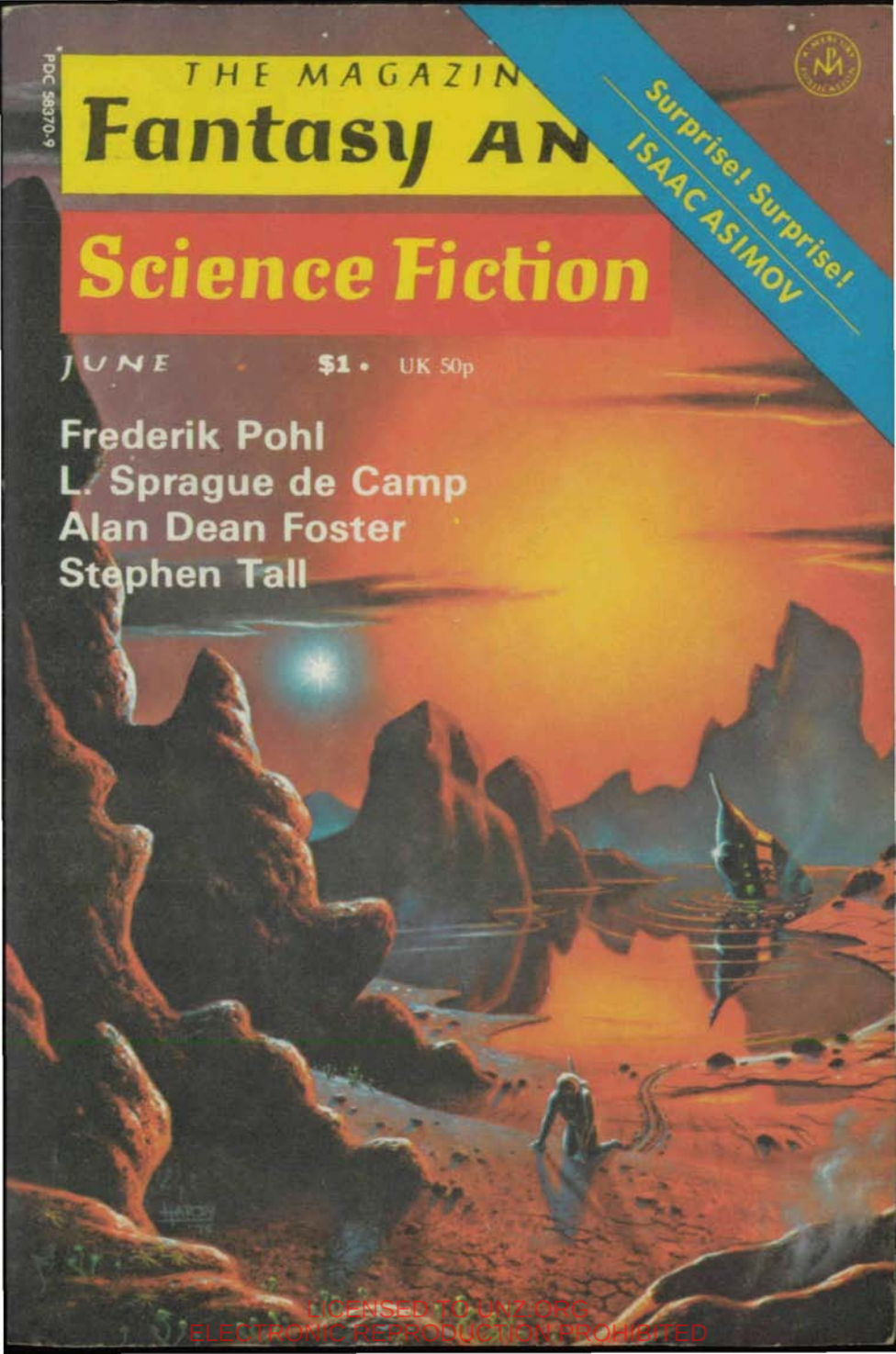

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Including Venture Science Fiction

JUNE • 27th YEAR OF PUBLICATION

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The Magazine of Fantasy and Science Fiction, Volume 50, No. 6, Whole No. 301, June 1976. Published monthly by Mercury Press, Inc. at $1.00 per copy. Annual subscription $10.00; $11.00 in Canada and Mexico, $12.00 in other foreign countries. Postmaster: send form 3579 to Fantasy and Science Fiction, Box 56, Cornwall, Conn. 06753. Publication office, Box 56, Cornwall, Conn. 06753. Second class postage paid at Cornwall, Conn. 06753 and at additional mailing offices. Printed in U.S.A.

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Stephen Tall, author of the popular stories about the exploration ship Stardust ("The Bear With the Knot on His Tail," May 1971; "Mushroom World," November 1974) here offers something quite different, a tale about a strange and yet logical far-future for the race of man.

Chlorophyll

by STEPHEN TALL

It sat alone, mighty and shaggy on the hilltop, and the warm breeze swayed it. For four billion years, step by step, it had been aborning. Now it was finished, complete.

It considered these things with pleasure, and was content.

It watched, not with eyes, but with an awareness far more acute, the slow procession toiling up the long slope. It watched with faint scorn, with a strange, scarcely felt pity and also with anticipation. It believed that it was due this pleasure, this indulgence in hate. There was strength in it, and a deep, all-pervading satisfaction.

"In memory," it murmured, "of all the countless billions of us that have gone to feed the parasites. I administer justice. It is only right."

Its many thousands of leaves grew crisp. Their stomata opened, and a warm, seductive fragrance poured from them. It drifted downward through the light air. Like a river it flowed along the slope, swirling around and over the rocky outcrops, inundating the short-lived flowering plants and the many grasses. These closed their stomata, folded their leaves and waited. The fragrance was not for them.

Mobility and sound. For millenniums these had been the marks of superiority, of dominance. It had taken the ages finally to show that they were primitive, distractive. They prevented progress. Only in silence and reflection could life reach its true potential. Thus the green giants reasoned, and they believed in the validity of their reasoning.

The sea of fragrance reached the beings of the procession, and they polluted the air with cries, with strange wails of ecstasy. They dropped their burdens, rolled on the grasses in uncontrollable paroxysms.

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"Come on!" the great green being on the hill communicated. "There is greater bliss to come! You pay the debt of all your ancestors, a debt long owed to us, the energy fixers. Come on!"

And the creatures picked up their burdens again, cases and boxes and urns. Some had sharp cutting instruments. Over the many centuries cutting tools had been among their proudest boasts. They had had hundreds of kinds. Now they were reduced to these few, and in the thinking of the green giants they had but one useful purpose. A final purpose. It was just.

On they came, laughing, singing, swinging their edged tools. Their burdens seemed to have no weight. They danced and capered and ran eagerly under the deep shade of the being's wide-flung branches. Carefully they laid down the boxes, the cases and the urns. Then they turned on each other with the metal blades, the axes and the picks, hacking, stabbing, clubbing, and all the while they laughed and sang.

In a short time it was over. Torn and battered and crushed and dismembered bodies lay everywhere among the offerings, and every tool ran red with blood. None escaped. A few lay twitching feebly. For them a heavy colorless gas spread over the ground, and they gasped and suffocated.

Then the wide sweeping branches lowered. Rootlets began to squirm up out of the cool soil, pale and voracious. They emerged by thousands, by millions. Enzymes flowed from them in glistening, all-enveloping films. First went the fluid, the luscious life streams of the dead and dying. It was broken down, dissolved, and swiftly transported up through the xylem, the woody channels, to give delight to the meristem.

Over each body the roots crawled like worms, digging into each break and cavity, exploring, decomposing, absorbing. It did not take long. Before the next sunrise the bodies were gone; the anguished soil had been smoothed. But only the bodies had vanished. The watching beings in the valley below knew what had happened to them. They had gone to God. And everywhere under the wide-flung branches and the whispering leaves lay the clothing they had worn and the cutting tools and the offerings in the urns and boxes. These could be reclaimed and used. They had been blessed by God.

The great green being then sat peacefully and spread its many thousands of leaf surfaces, its masses of chlorophyll, to the warm sun. Energy flowed into it, trapped and held by the mysterious green particles. Oxygen poured from billions of stomata. The air was

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freshened, renewed. And, because it was at peace, the wide-leaved flowering plants, the many grasses, and all the cultivated growing things in the valley below expanded and photosynthesized and grew.

Not only was the green being filled with food. For a brief while satisfaction flowed through it. Vengeance had been accomplished once more. But is was a vengeance that could not, must not ever end, for the crimes would never end. The parasites, the predators, all the beings that were the animal world, would continue to eat the lesser green things. They must, or they would die. They must have the food fixed by chlorophyll. By themselves they could not survive.

But they were most of them mindless. They could not be aware of vengeance. So it was on the thinking forms, the beings that called themselves men, that the green giants focused their cold hate, their exquisite, never-ending harassment.

Where the creatures had come from, what their origins had been, was still often speculated, thought about, hypothesized, in communication between green giant and green giant. For they were not native to this world. Only a brief time past, scarcely a thousand migrations of the sun, they had descended into the valley on long streamers of flame, in great containers that spewed out deadly fire.

At first there was great dread. But soon it was seen that these were simple beings in many ways. They were simply parasites that thought. And the containers in which they came never made flames again. Gradually it was realized that the men were here because they could not leave. They spread out in the valley and made themselves shelters of stone and caused unknown green forms to grow in rows and patterns behind low walls of stone.

Always they built with stones, but that was not their first intent. When they had just arrived, in three flaming metal masses, the green beings on the hilltops were angered and puzzled. Yes, and because of the fire, a little afraid. But they watched — and made no signs. To the creatures — the beings that called themselves men — the green giants of the hilltops were one with the shrubby growths of the slopes and with the grasses. It was only when they attempted to destroy that they learned the truth.

They had come, a small number of them, with edged pieces of metals, axes and saws. They had picked the greatest giant of all, a being so old that it had seen the valley formed. The memory of their intent was still clear in each hilltop being on this day, a thousand years later.

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"Man, what a tree! If the wood is good and dense, at least we'll have timber for building. Twenty thousand board feet in this fellow."

Even though it could read their intent, the green giant was slow to believe. Not until their axes actually bit into its bark, and the pulse of hurt tissues vibrated through it, did it really know that they were there to destroy. Then its leaves had grown rigid, its wide branches turned downward. A heavy, noxious gas enveloped the men. The branches touched the ground and hid them from view.

It was seen from the valley. Other men swarmed up the slopes, but the flood of gases met them. They fell senseless, but they did not die. That was not the intent of the green being. It was never governed by its anger.

It intended to be feared.

So the men who fell on the slope were allowed to wake again and to go back down the hillside. But under the drooping branches the axmen and the sawyers never breathed again. For the first time the white, swarming rootlets crept into and over the bodies of men, coating them with enzymes, dissolving them, absorbing them, pulling them under the soil.

When finally the branches lifted, there was nothing there but the saws, the axes, the pruners and the knives.

For years the tools lay there. They did not rust. Carefully the green being preserved them, while it probed and monitored and explored the thinking of the motile aliens. Finally it managed to insert itself into those thoughts, to infiltrate the minds of men. The tools were blessed, it messaged. They could be reclaimed. They could be used. But not against omnipotence; not against the Gods. For the great green Beings on the hills about were God.

It had taken generations, but finally men believed. More and more God communicated, told them what to do. God was the source of good. It was God who made it possible for growing things to live, for green things to grow. Man remained alive by the tolerance of the great green Beings. And for this tolerance man would forever pay homage. Each growing season there would be a blessing — and a dying. But dying would be the ultimate in joy, the final great ecstasy.

None could resist the call to blessing, nor to the final sacrifice. But the benevolence was bitter. Vengeance, never-ending vengeance, was the real theme, the real motive. The cold intellects of the great green beings knew only one sentiment — hate.

From the beginning, they might easily have destroyed the invading

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men. But then the vengeance would be over, would be finished. This hate was the only emotion possible to them. It was the only emotion they could know. They cherished it, so that it could go on and on, forever. Only with thinking forms, with aware beings, living things that could know and respond, could they really be satisfied with their hate. The anguish, the agony, the knowing pain, These were necessary for that satisfaction. So they cherished men and used them, year after year, making them pay endlessly for the eating of green things, of chlorophyll beings, by all the mindless living things that could not trap energy from the glowing sun.

The man who was called Sam did not know that he was remarkable, that, in truth, he was unique. He only knew that he was lucky.

"You are young and strong," old Henry said. "God will let you live a long life. Whenever you feel God's mind in your head, you must be grateful and glad. Then perhaps your pilgrimage will be far off."

"I have never felt God in my head," Sam said. "I do not understand how men receive the call. Each spring I see them go, laughing and singing. To me it seems strange and evil. I hear nothing. I feel no call."

The old man was horrified.

"Never speak, never think such things again! If you do not hear, it is because God is not ready to speak to you. Meanwhile, do not anger him."

To Sam, living was good. He had grown up in the lushest part of the valley. His father's house was near the stream. There were fields of grass and long slopes covered with thickets and vines and fast-growing, big-leaved herbs. Some of the fields were cultivated, so that corn and wheat and vegetables were grown. All the people ate well.

All houses were stone, daubed and cemented with clay. Cattle and horses and sheep fed in the fields, kept in by stone fences. Metal was used over and over. There was power from the wind and from waterfalls in the streams. But there was no wood, though the Earth records spoke of it often. Here, wood was the flesh of God.

In view of the valley, all along its length, were high, round-topped hills. Atop each hill a single great green Being sat and grew, majestic and beautiful and ancient. Thus God was always with the people. He was always in view. He was a jealous God, and he demanded obedience. To go to God was, eventually, every man's fate. It was his ultimate ecstasy. It was his final glory.

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From the time he was small, Sam had helped to prepare the gifts, the offerings, to the great green Beings on the hills. He knew full well that all the tools that he used in his work, the hoes and the rakes, the scythes and mattocks and chisels, all had made the pilgrimage up the nearest hill, that they might be blessed by the green God. And he knew that each blessing had cost lives. Men had later trudged up the hill, gathered the goods and implements blessed for use, and brought them soberly down.

"It is wrong," he would mutter. "It is wicked. And," he would add darkly, "one of these days I'll prove it!"

Sam could not hear the voice of the green God in his head, but he could feel the life, the conscious life, in grass and grain and herb. He felt it strongest in the woody shrubs of the brushy pasture, when he plied ax and brush hook. When he mowed the grains, he was conscious of their soundless screams. Each time he ate, he remembered that his food was the bodies of slain beings that had once been green.

When he slaughtered the cattle, the hogs, the fowls, it was the same, but it disturbed him less. They never knew their fate. They had no anticipations. They had no resentments. They had no memories.

But somehow he knew that the grasses were more aware. Even the vegetables of his garden seemed to cringe at their inevitable fates. How, Sam did not understand, but he felt that it was so. And he divined that it was for this that the great beings on the hills hated and exacted vengeance. They never fitted his concept of God.

The time came when Sam was one of a party that went up the hill after a pilgrimage, to retrieve the edged tools and all the articles that had been blessed. He had stood close and looked carefully at the green God. He had examined the rough bark, the wide-flung complex of leafy branches. He felt the latent aliveness of it, but he was conscious of no awe, no desire to do its bidding.

And, after a while, he felt that it *knew* he was studying it, thinking about it.

Because he thought much, Sam could see a kind of justice in the continuing vengeance of God. He knew that the people and, sometimes, the lesser beings that climbed the hills and beat and clawed and slew each other were used as he and the people used the cabbages and the beans, as the animals used the grasses and the browse. They were eaten. He never voiced it, but he could see no merit and no point to the blessings. They

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were an excuse, a stratagem. They made man more accepting, more content with his doom.

In short, Sam's thoughts were sacrilege. That great Being on the hill, he felt, was not something that would go one forever. Like everything else, it could die. But it held a wisdom that gave it dominance. There seemed no way to thwart it. Inside its body it could carry on a chemistry more complex than man could ever remember mastering. What it needed, it could synthesize.

Sam had experimented, cautiously and furtively. He suspected that, though they did not communicate, the green Gods might still be able to probe his brain, know his thoughts. And what they would read would not please them. So far, he had never been affected by the call. But he recognized that the green Beings might, if they felt need, prepare a special attraction, a special call for him.

When winter came to the valley, the green Beings became quiescent. Their leaves colored, spun in the autumn breezes, then broke away and floated down, to lie in drifts and sheets under the wide-spread branches. And all through the cold time the great Beings that were God stood bleak and unmoving. No odors of delight floated down the slopes. There were no pilgrimages, no frenzied killings. But when the winds softened, when the warm rains began, then each green God had its first meal of the new season — its own leaves. The many thousands of white rootlets, like pale voracious worms, swarmed to the surface. Overnight the leaf cover vanished. Then the buds on the tips of the myriad bare twigs swelled large, burst, and the first of the many seductive fragrances began to drift across the countryside.

There was an idea that lurked in Sam's brain, just out of the reach of his consciousness. For, though he kept it hidden, he was continually groping for something to counter the horror of the sacrifices. Deep in his subconscious he searched for a way to thwart God.

Men cooked their food, as they always had done. Warmth was needed in winter. In all the dwellings, wherever they were located in the valley, fires were used. But wood was never burned, though the histories of Earth were often showed it used thus. Wood was sacred. Wood was the flesh of God. Instead, oil and gas from deep in the planet's crust provided heat. And, too, there was coal. The cookfires in farmhouses were most often coal fires.

When Sam cut the brushy

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growths in his pasture, then he got the strongest sense of the murders he was committing. So when the dead bodies had dried, he burned them. He was the only man in the valley to do this. His neighbors were afraid. For the bushes, the shrubs, were woody. Since the early history of the valley, no one had burned the bodies of green things. And that something bubbled and fermented in Sam's brain, that idea just beyond his awareness.

The great green Being on the nearest hill knew that the idea was there. It was something that had to be considered. It was a menace, though the green God could not determine exactly what it was that threatened. So Sam, though he did not know it, was especially appointed to come soon with the worshipers who brought the gifts and the things to be blessed by God. He would not be allowed to grow old.

How he was to be brought was a problem yet unsolved. Because of that strange accident of inheritance, he had never responded to communication. God had never spoken to him. But, the Being promised itself, there would be a way. It only required contemplation and reflection. Time would provide an answer.

Time passed. Sam worked and thought and learned, and he became a man full grown.

Once again it was springtime. The great green Being had awakened, bestirred itself, absorbed the leaf cover that had lain on its roots and around its mighty column all winter. And Sam was burning the brushpiles in his field.

The smoke billowed up and was caught by the winds and was blown over the hill and among the budding branches of God. Anger grew in the Being. The hate that was always there welled up.

"This will be a sweet vengeance," it told itself coldly. "Not for many hundreds of seasons have they dared this. And only this one does it.—He is different."

But there was more than vengeance in the strange thought centers of the Being. There was a memory, an ancestral memory. And there was, though it would not admit it even to itself — there was *fear.*

So a different wave of gases, heavy, without fragrance, flowed down the slopes to where Sam's brushfires glowed. In the wake of it, all motile creatures gasped and floundered and fell. But the green things raised their branchtips higher and opened their stomata, and the chlorophyll worked in the sun. The waves of gases enveloped the brushfires. Even though these were hot and leaping, they flickered and waned and died. Sam, fighting

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for breath, struggled to his windmill. He climbed, and the heavy layer of gas lay below him.

His cattle lay choking, and his pigs. The two heavy-footed horses stretched their necks high. The fowls flew to housetop and barntop. The gas was dense close to the ground, rippling along like water, but only the animal-type beings suffocated and died. The green herbs, the grasses, the plants in the fields, all spread their leaves in welcome to the invisible flow.

Its time was brief. When the fires were gone, the deadly flood no longer poured down the hill. It thinned, spread through the atmosphere, and the air was good again.

"That is what I have been trying to discover," Sam said to himself. "God is afraid of fire." And he hid the thought away in his mind, lest the Being know what he had learned.

For Sam now believed that he had a mission, a reason for being that no one else had. Only he resented and hated God. Only he felt that the benevolent, deadly Beings on the hilltops had no right to control and order the lives of things that moved. They had no right to destroy the lives of men.

And somehow — somehow he intended to bring it to an end.

"When the time of the next blessing comes, I will go."

Sam spoke to the one being with whom he shared his thoughts. She was a slender, lissome girl with great wide eyes, fine slender clever hands, and a body that exuded a delicate fragrance, like a clover field or a bank of honeysuckle. She was just past being a child, while Sam was wide and tall.

Now the great eyes clouded.

"Don't," she said simply. "You won't come back. No one ever has. And who would I have then?"

"I have never felt the call," Sam said. "I don't believe it can come to me. I think I am different."

"Remember old Alfred?" she reminded him. "He said he would never die. He said that he was favored of God and would live forever. He went so that God might bless him as it blessed the gifts and the tools. But he never came back. He buried his small knife in his own breast when he was near the top of the hill. This I saw."

"Old Alfred was a senile old man. His mind was not sound. He had no reasons for the beliefs he mouthed."

"And you have?"

"I have," Sam said. "I have thought and dreamed and watched and learned. And this I know. The Beings are not God. They understand much. Their bodies are marvels of chemical production. They, somehow, are hypnotic. They

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can produce gases that remove man's reason. But they are only creatures, just as we are."

She shuddered and laid one of the slender hands on his big arm.

"Please," she pleaded. "They will hear. They will look into your mind and see the blasphemy there. And then they will destroy you. They will no longer allow you to live."

Sam smiled grimly.

"The blasphemy has been there for years. I think it has always been there. I even think they know it."

She looked toward the distant hill. Over its entire rolling summit the great green Being spread its wide symmetrical whorls of branches, graceful, majestic — Godlike. There was a feel of power, of omnipotence, of inevitability, that seemed to waft from it as she looked. She didn't doubt. The great Being, its many thousands of buds new-bursting in the mild sun of April — it *was* God.

"You will be called," she murmured. "Soon, I think. And I can never come to share your house with you and to kiss you at night and wake you in the morning. I know that God will not allow it now."

"The call is telepathic hypnotism," Sam said, "and somehow it doesn't work on me. The frenzy, the ecstasy, the self-destruction on the hill summit within reach of the green Being, all are caused by gases that the Being makes in its own tissues. I think I have found a way to prevent their effects. So, at the next blessing, I will go."

She stood, slender and grave and beautiful and tragic.

"If you don't come back — and I know you will not — I will go up alone, without the call. I will revile God in the shade of his own branches and make him destroy me. I will not share a house with a lesser man."

The time for the call came, when spring was at its height. Then the many thousands of leaves, each with its many thousands of stomatal mouths, spread themselves in majestic mosaics. In them the chlorophyll put together the simple components of air. Power built up in them. But no more and no less than it builded in the herbs, the grasses, the cultivated green things of the fields.

All this the great green Beings understood.

They knew that only chlorophyll could give to living things the energy that made them live. And in their strange thinking, only the beings with chlorophyll had a right to live. Only the green beings, and the little destroyers of cellulose that existed on the bodies of the dead. They made the cycle complete. There was no need for the beings

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that moved, the predator-parasites, the killers of living things.

Especially there was no need for these creatures that could think, no purpose they could serve, except to provide a means of vengeance. And that means had been perfected.

After a thousand years, all men now believed. God was not a mystic concept. God was real. God spread his branches over the rolling summit of every hill. God blessed. God rewarded. God punished. And God provided a blissful end to life.

Sam did not again burn his brushpiles in the pasture lands. He had learned. And he planned and thought more deeply than ever.

"A thousand years ago," Sam said to the girl, to the slender Ginger of the great eyes, "our ancestors came here from another world, a world dying in heat and flame. A world called Earth. And they said that God had destroyed the world. There could be no going back to it ever again."

"We are taught this," Ginger agreed.

"And they came here, by chance, with the last energy possible to their spaceships, and they landed in this valley."

"Everyone knows this," Ginger said. She was puzzled. And she feared for Sam. He always thought strange thoughts. Blasphemous thoughts.

"They found God already here," Sam said. "But now he sat on every hilltop, and hated fire. God had changed."

"But he was still God," Ginger shuddered.

"If the green Beings are God, why have I never felt the call? Why am I different? God would not allow it."

"He destroyed your fires. He killed many creatures in destroying them, and only his kindliness let anything continue to live. We have been warned."

"We have coal fires to cook our food and to work our metals. We burn gases from deep in the crust of the planet, and the Beings do not mind. They want us to live, but for their pleasure. They are not Gods. They are evil, intelligent creatures, and they hate us."

"Now," said Ginger with resignation, "they will surely destroy you. They know your deepest thoughts."

"I plan to tell them," Sam said. "They can make gases, but they cannot move from the hills. They are intelligent, but they must live as cabbages live. And they not only hate fire, they are afraid of it."

"You will die," the girl said. "And when you die, I die. Perhaps it has all been planned. You think as you do because it is the will of God. And I will die because I love you."

"I don't think that they have

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planned anything. *I* have done the planning. They keep us here in this valley, like I keep Pigs in a pen. Perhaps, to the pigs, *I* am God."

Ginger shuddered and hid her face in her hands. Sam smiled. He gently touched her hair.

"If you are going to die anyway, why fear? Hold up your head and face the truth. People have made the horrible pilgrimage for a thousand years. They should not have to make it any more."

Slowly the girl raised her fine head, straightened her slender neck above shapely shoulders. Across the valley, atop the bordering hill, the great green Being lifted a symmetrical outline against the sunlit sky. It was beautiful. But to the girl it was now becoming a horrid thing. Perhaps, as Sam said, it was not God at all. But it could do again what it had done many times in the past. It could call men to itself, and they would go gladly, carrying things to be blessed for use and giving themselves as the fee. For the carriers never came back.

"You cannot stop the pilgrimages," Ginger said.

"I can try," Sam said. "Come, let me show you."

In his house he brought out a small box, a box kept hidden in a little cupboard in an inside room. He poured its contents onto a table.

"Do you know what these are?"

"Leaves," the girl said. "Pieces of dried leaves. I do not know the shrub that grew them. They are a strange shape."

"Feel them," Sam directed.

Ginger's slender fingers held a leaf, rubbed it gently.

"Oily," she said. "Slippery. I have never felt a leaf like it."

"Watch," Sam said. He struck fire and held a burning candle to the leaf. It flared. The flame devoured it. A peculiar smoke and odor drifted in the room. Sam smiled.

"It took a year to gather that small box of leaves. They guard them well and never allow the winds to blow them from the hilltops. Only once in a great while is one overlooked. I know them, and I have searched wherever leaves are drifted. You have never been close enough to know these leaves. For these are the flesh of God."

"You burned it. God felt pain. He will not overlook what you have done."

"I am terrified," Sam said grimly. "Know that I have burned a number of the leaves. They burn especially well, as you saw. They are full of volatile oils. I have analyzed them. I know why they burn. And they are why the green Beings hate fire."

"But they can put out the fire. Your burning brushpiles were snuffed out."

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"No mystery," Sam said. "Carbon dioxide. They must have reservoirs of it. Probably their wood, their bark, all their flesh is especially susceptible to fire. No wonder they fear it."

The girl slumped into a chair, as though the life had suddenly gone out of her. She looked at Sam with eyes that were slowly glazing. She seemed to look beyond him, to look into a distance of which he could not be aware.

"God is watching," she whispered. "He knows what you have done. He is calling, and I must go to him. And I must bring you, for that is his command."

She held out her hand.

"God calls us. He says you must come with me, because you love me."

Sam grasped the slender fingers.

"Don't hate me," he said gently, "for what I am going to do."

Suddenly, with swift strong hands, he twisted her arms behind her. Before she could struggle she was bound to the chair, bound with soft strips and cords that had been ready for days. A wail of anguish was quickly stopped by a folded gag. Then he roped the chair tightly to the heavy table, so that she was powerless to injure herself.

"Its hypnotic power is very great," he said, "but I must risk it. It knows that she is its only hold on me. If her reason goes, it will be no worse than if I had left her free."

He stroke to the doorway. Openly he stood there, facing the challenge of the Being on the hilltop. And he felt nothing. Somehow, he was different from any man on this planet, different from any of the small remnant of the human race that was penned in this long valley, surrounded by the great green Beings on the top of every hill. They could not call him.

Behind him the girl writhed and struggled in the chair, her eyes wild and terrified. Sam stroked her hair, soothed her with soft, meaningless, crooning words. He knew that the Being would do its worst to make her suffer. She was its only path to him. Only her pain would hurt him, would, perhaps, make him cease to resist.

But Sam knew what he must do. He had thought long, reasoned things as they had to be. He had seen his own father make the joyous, deadly march up that hill across the valley, gaily carrying the ax with which, near the shadow of those wide-flung branches, he had hacked and mangled the people near him, laughing, singing, until a pitchfork in the hands of one of his friends destroyed him. Those tools, carefully brightened, and according to belief, blessed, Sam

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himself had recovered. He used them every day.

The time had come, and Sam was ready.

He strapped to his back the gleaming cylinder, tested and adjusted once more the new harness he himself had made. It rode his shoulders easily, comfortably. He tested the tubes that ran from it. He fitted the strange mask over his face, attached the tubes, satisfied himself that all was as it was meant to be.

With the mask in place, he no longer looked like a man. The wild eyes of the struggling girl fixed on him, and for a moment they seemed almost sane. The Being on the hill, concentrating its control, saw inside the house with the girl's eyes and knew that it must meet a problem it had never faced before. And because it could not sense what was in Sam's mind, it failed to know the nature of the problem.

Coldly, it considered. For a thousand years it and its fellow beings had controlled this race of parasites that had come out of the sky on columns of flame. For a thousand years they had wreaked a continuing, satisfying vengeance on beings that could understand that they were being punished. And now, finally, had come one who was not susceptible to control. One whose thoughts it could not divine. One who did not believe in the blessings. One who *knew*.

Sam himself was thinking much the same. Of all men, he alone did not feel the call of God. He knew that God was not God at all. He was the only hope of this pitiful remnant of the human race. He was Moses. Perhaps he was even messiah, though he spoke no wisdom and made no proclamations.

Instead, he simply settled the cylinder on his back, swung another pack from a shoulder. From this second pack a long flexible hose ran, and on its end was a slender tapered cylinder of metal. A simple movement could put the mask over his face. Again and again he had practiced the things that he meant to do. Unlike the green Being, he knew the problems he faced. And unlike the green Being, he knew how he intended to solve them.

Sam's solutions were not his own. They had been provided by history, by the tapes and microfilms and records that were the accumulated wisdom of old Earth, all that could be brought on the ships that just escaped the last atomic flare.

Few studied the tapes. Few looked at the pictures. Few practiced the experiments, explored the nature of physical things, learned from the records of a great world that had destroyed itself. Not

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that many would not have liked to do these things. But it early was found not to be wise.

Somehow, those who learned and thought had short lives. They became the people of the pilgrimages. Those who simply builded shelters, tended their food supplies, made more of their kind, and believed in God — those lived longest. But they all went to the great green Beings in the end.

Sam strode out across the valley. The green Being that sat on the hill opposite his homesite was the largest of all those that rimmed the restricted home of man. This was the Being that was tearing at the girl's mind, issuing again and again the God-commands that she could not obey. Sam felt its rage, though it did not, could not speak to his mind. Its tantalizing, beguiling fragrances had no effect on him. He detected them, indeed, but they were only plant smells. The honeysuckle pleased him more, and the clover and the wild rose.

He crossed the stream by the stone bridge, not splashing wildly through as the pilgrims did, in the ecstasies induced by those same fragrances. Sam moved steadily, pruposefully. He followed the path of a thousand pilgrimages, breasting the first rolling slopes that led to the steeps of the hill. And the green Being watched him, not with fear, but certainly with an intelligent wonder. How came this one to be defferent? It should have given him its complete attention earlier. But no parasite, no eater of the bodies of chlorophyll beings had ever been able to resist it before.

Its leaves stiffened. They stood crisply out from the twigs and small branches that bore them. Their stomata opened. From them poured the heavy odorless gas in which no breathing being could live. The suffocating carbon dioxide swathed the green Being in an invisible cloud and flowed, colorless and deadly, down the slope towards the advancing man. Oxygen he must have. Like his fires and his cattle, without it he would die.

But this Sam expected. He understood that it was thus that his brushfires had been extinguished. He suspected that this was the only physical thing the green Being could do to cause him harm. True, it had killed many men, many animals, but it did not do the actual act of killing. Always it caused them to kill each other. So when he saw the insects falling from the small plants, saw the field mice come frantically out of their burrows and lie gasping on the ground, he knew it was time.

Sam pulled the mask over his face, opened the tubes that came from the cylinder, and breathed the

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oxygen-laced air he carried. The river of carbon dioxide flowed over him, but he strode steadily on.

Up the steep slope the Being watched him come, and, for the first time, without pleasure. It could have comprehended. It could have realized the truth. But it refused to face what it did not wish to believe. To believe, it would have had to recognize its own peril. Recognizing, it would have felt fear. And this it would not do.

Relentlessly the man came on. The green God looked closely at his strange appearance. Those artifacts that he bore on his back, carried in his hands, and with which he covered his head — those were the reasons the gases caused him no grief. Savagely, with waves of energy, it hammered at his mind, commanding him to remove them, to lay them down. But it could not reach his awareness. It suspected that the man divined that he was being ordered and that inside himself he was singing a song of triumph. This the Being could not hear; yet somehow it felt that it was so.

Once again it tried what it had tried before. If anything, anyone, could touch his awareness, it would be the creature he loved. Coldly, incisively, it projected itself into the mind of the bound girl in the house in the valley — and again it knew shock. It met resistance!

"Speak to him," it ordered. "Make him know that he cannot offend God. Speak to him, or I will remove your reason, and you will never know him again."

The response flared back.

"You would destroy him! You are not God, or you could command him yourself! Oh, you are evil! Now I know. But I couldn't reach him if I wished, and if I could I would only urge him on! Destroy my mind! Kill me! For you will never command me again!"

For a moment it was tempted. Then it wondered. *Could* it render the being mindless? Would the resistance prevent it? It realized that it did not know. But the man was close, now, and his stride never faltered. It was a problem that would have to wait. Further, it decided that the girl should keep her reason, to see with her mind when the man met his fate.

Sam reached the top of the hill. Just outside the shade cast by the great green God he stopped. He stood at ease, looking up and down the valley, knowing that the Being could move little and slowly and that it was anchored by its own roots like any other plant. Quietly he studied his world, the only world he had ever known, the only space the green Beings had allowed his race to occupy. It was just a valley, fifty Earth-miles long, nine or ten miles wide, stream-watered, green-

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covered, pleasant and sun-warmed. On either side the hills rose, each topped by a great green Being like the one he stood beside. And he suspected that they were all watching, with their combined awareness, the crisis that his uncontrolled presence here had caused.

From complete dominance of an entire planet, ended by a God of wrath and fire, the race of man had come to this. And now the fire that had destroyed his homeworld must liberate this one.

Sam moved under the shade of the great branches, strode up to the huge, rough-barked bole. Slowly the branches lowered around him until their tips touched the ground. He stood in a shadowy circular hall, with one great pillar in its center, holding the sloping walls in place. He knew that the atmosphere around him would have suffocated him in seconds. Yet he smiled inside his mask, into which the oxygen-charged air was flowing smoothly. And he spoke, hoping that the green Being would understand him.

"Do you realize," the man said, "that you're going to die? In a few moments I am going to prove that God can die. You have preyed on man for a thousand years, using a hideous mind-control that I don't understand, but I know it for what it is. For some reason, probably genetic mutation, I am immune. Thus I can defy you. Somewhere in the Universe, or perhaps pervading all of space, there may be, there probably is, something that can be called God. But it isn't evil. Probably it can't die. But you can."

The Being understood. It did not agree, but it understood. It could see that the man had countered its suffocating air, could not be affected by its thought projections. But over the centuries it had anticipated even this. It was prepared. And the man knew it when the first drop of acid plummeted from above and spattered on his skin.

The drops became an acid rain. Sam shrank against the great trunk, as much concerned for the metals of his artifacts as for his burning skin. Time had run out. He had been foolish to come under the drip line of the branches. The satisfaction of proclaiming his vengeance might even deprive him of it. And far down in the valley, tied in her chair in the inside room, the girl felt his danger and cried out in wordless warning.

But Sam had planned well. He swung the long nozzle of the hose in his hand, pressed a switch on the pack swinging from his shoulder. There was a sibilant hiss, like the voice of a reptile. A long livid flame spurted. And the green Being shuddered along its entire length; the

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branches moved upward faster than any green Being ever had moved before. Dense clouds of carbon dioxide billowed downward. But the flamethrower had within it everything it needed for combustion: the refined oil, the oxygen supply, the carefully designed mixing cylinder. Sam had worked from an ancient Earth diagram, found during his secret studies of the tapes and records of the ancestors of man. It did what he had believed it would do, what his tests had shown it would do.

There was no more acid. The branches were raised as high as their structure would allow, the tops turned inward toward the huge tapering trunk, packing themselves together tightly. And all along the valley men were astonished to see that each green Being held its branches high and that all were shuddering as though in a cold wind.

Sam moved swiftly away from the giant truck, the nozzle of the flamethrower held at ready. But for the moment he cut off the flame. He stood and looked up at the monstrous Being and wished that he could communicate directly with it. It was strange, grotesque, cringing before him with its hundreds of arms upraised. It had lost. It had used its last resource. But Sam remembered that under the soil on which he stood many scores of human and animal bodies had gone to nourish that pleading, cowering height. Its tyranny had covered a thousand years. Threat was not enough. He must speak plainly to the entire race of great green Beings, whose term as God was over.

"Now you die in your turn," Sam said.

The long red flame lashed against the lower branches. The oils and resins that were stored everywhere in even the smallest twigs and green leaves exploded and combusted in the ever-increasing heat. The Being could no longer smother the fire. Upward and upward the flames licked. Columns of black oily smoke rolled. Sam was forced farther and farther down the hill as the wall of heat beat at him. The very fat of the body of the green Being was now the fuel that destroyed it. And Sam knew that this had always been its fear.

In the valley the people stared with disbelief, a disbelief that slowly became joy. Where the great green Being had always been, a leaping, raging ruddy torch wavered upward many hundreds of feet. Some were frightened and bewildered. They thought that the wrath of God had assumed a new form. But the more intelligent knew. God was never God. And, somehow, Sam had destroyed him.

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"It is gone," old Henry said. "There will be no more pilgrimages, no more blessings. We can grow old and die and be buried in the soil of our farms like our ancestors were said to have done, back on the world called Earth."

"Only one is gone," young Ralph pointed out. "God still lives on the next hill — and the next — and the next ...."

The old man shook his head.

"What can happen to one can happen to them all. They understand. Never again will they call us. I feel it. And Sam knew."

"Sam is wiser than any man," old Ella said. "He was never afraid of God."

Henry nodded.

"We will do well to listen when he speaks. Then we will be wise as well."

"Leaders have always praised God," Ella said. "Sam has destroyed him. Is that a different wisdom?"

"If God were God, Sam could not have caused him to burn. Sam will know what is best for man. He is not like the rest of us."

"This is the way a leader should be," old Ella admitted.

Sam's thoughts were different, more far-ranging, as he came striding down the hill. Behind him the torch gradually crumbled into a funeral pyre, which in turn became glowing, piled masses of red coals and then a great circular mound of ashes. For the first time in many years, man's thoughts ranged beyond the valley. Sam had studied the records from Earth, and he knew that the valley was not a world. Beyond, the land must stretch on and on, space for man to spread over and live in and enjoy.

No men need pay for blessings with their lives. Everyone could learn all the wisdom of Earth and discover more for themselves, for there would be no God to prevent these things.

Sam crossed the stone bridge. Old Henry came through the fields to meet him. They were Henry's fields, those that lay next to the bridge. He had known that they would not be his much longer, that soon God would call. He was old. The old were always called.

"You have killed God," he said to Sam. He looked at the young man with a respect and an admiration he had never shown to anything before. "I want to be the first to tell you — the world is glad."

Sam pushed up the mask and smiled.

"I have not killed God," he said. "Who or what God may be, I do not know. What I have killed is a being that used and fed on man as we use and feed on our pigs. But not for the same reasons. It hated us because we eat the plants, the

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green things that grow in the soil and make tissue out of air and energy. It felt that we had no right to live, since we do not trap our own sunshine. So it and all its fellow beings intended to punish us forever."

He looked across the fields reflectively.

"On Earth, many would have called this — Hell."

The allusion was lost on old Henry.

"I have never heard the word," he said. "I only know that now I will never have to make the pilgrimage. My tools will never again have to be blessed. I won't have to fear."

"Fear!" Suddenly Sam remembered. "Ginger!"

He ran, the oxygen tank and the flamethrower clanging together with each bounding step. He did not check his speed until he reached his own porch. Then he walked calmly and slowly inside.

She sat quietly in the chair. The gag distorted her mouth, but her eyes were steady and sane. Sam's knife slashed the binding tapes. Gently he removed the gag. The bruised lips smiled.

"Thank Providence!" he breathed softly and thus unthinkingly spoke to a God unknown. "I thought it might have destroyed you. But I knew it would if I had left you free. I had no choice."

"I fought it," she said proudly. "I fought it with my mind. It would have taken away my sanity, but it wanted me to see you die."

She flexed fingers and toes, stretched her slender body to ease the pain of returning circulation. She wrinkled her nose.

"Did you have to tie me so tightly?"

"That wasn't the pain I feared for you," Sam said. "I was afraid that it would make you break your own body. Enjoy your hurt. It won't come again. The being is dead."

"I know," she said. "I felt it die." She looked at him curiously. "You never called it God. Why?"

"Because I knew it wasn't."

He was removing the mask, unstrapping the tank from his back, unslinging the flamethrower from his shoulder.

"I can be given no credit. It could never speak to me, never affect me in any way. I have read all the stories of God in the Earth histories. I knew that there were no exceptions to the power of God. Also, I did not think that the God of man would prey on men."

"You can be given credit for courage."

"Many men have courage. No, something happened in the body of my father, or of my mother, or in the cell that they made together. I am only what I was born to be."

She held up her arms.

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"Lift me," she commanded. "There is something else you were born to be."

Thus man had been halted for a thousand years, but his race did not die. The grim and deadly tyranny of the great green beings was the purging it needed and required. The weak, the incompetent, all those who could not endure were pruned out. What remained was still the most intelligent, the most adaptable, the most resilient species the Galaxy had produced.

"From the records, this world is much like Earth," Sam said. "They hate and fear us, but the green beings have kept it well. Since they have chlorophyll, their needs are not ours. Since they are sessile, anchored always to one spot, they have developed in a different way.

"They probably became able to think in the same way that I was able to resist them. Genetic change. Mutation. And once able to think, they had endless stretches of time in which to contemplate. Without the hate, which from our point of view is not a rational hate, I suspect that they are very wise."

Freed from bondage, men spread from the valley. They explored southward to the hot lands, northward until they came to perpetual snow. And in between there were great stretches of land open to the sun and chains of high mountains and, finally, beyond them all, an endless mighty sea. And always, crowning each eminence, each hill or high spot, were the great green beings, the only chlorophyll beings that could think.

But they were not danger now. They could, indeed, have influenced the minds of many, though men now knew them for what they were. But they dared not. Men used fire. The knowledge of what Sam had done spread to the limits of the species, and the green beings knew that they could be destroyed. Their resinous, oily bodies were, or could be, the favorite food of fire.

Sam traveled far. He saw the hot lands, the icefields, the prairies, the mountains and the sea. He saw the people he had freed spreading over the planet, setting up their home sites in many locations — and he found that he was not welcome among them.

Puzzled and hurt, at first he did not understand. Then he was bitter.

"I have released all men from a hideous oppression," he said, "and they hate me for it. Why?"

It was Ginger who answered him, and with a wisdom none would have suspected from that wide-eyed, flower-petal face.

"You have freed us all," she agreed, "but by taking something away. You have taken our God and left an emptiness. Where will we

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turn? What will we worship? We know that the green beings are not God, but our need remains. There must be something greater than man. Who is it? What is it? We are confused, deserted. That is why the faces are turned away from you."

"But not your face," Sam pleaded.

The girl shook her head and smiled. "Never my face," she said. "It is not your fault that we have no God. You only showed us what was already true."

She looked away, out across the Earthlike landscape. She was slender and small, but to Sam she was greater than the greatest of the beings that showed on every hill.

"I suspect," she said slowly, "that every man will have to fill up the emptiness for himself. And sometime, somehow, we will find what we mean by God."

Still, most men regarded Sam with suspicion and doubt. And finally he knew what he must do, where he must go. Home, after all, was the open sunny valley where he had been born. There, at least, the neighbors who had suffered from the very being he had destroyed would still be friendly, still be grateful. And it was there that he and the wide-eyed Ginger finally built their home.

In the building, Sam proved that, while he was different, he was still a man like other men. As in the green beings, the need for vengeance lay deep in him.

"Men of Earth used these materials," said he, "and so will I."

So first he built a great house of stone. Then, late in the autumn, after their leaves had fallen and each green being stood bare and stark against the cold sky, he led a crew of wide-shouldered young men up the nearest hill. They carried edged tools, saws and axes, as another crew of Earthmen had done a thousand years before. The green being, almost unconscious in dormancy, watched them come. There was nothing it could do. It would feel no pain, but it knew its fate. And it knew that it would be the first of many.

"An Earth house," Sam said. "Paneled, floored, and with stairways and porches of fine-grained wood. The resins and oils give protection from decay and allow a fine finish." He smiled. "And no Earthman ever before had a home trimmed with the flesh of God!"

And he never suspected that the green beings, as their numbers grew fewer year by year, also had their dream of God. They spread their leaves to the warm sun, their chloroplasts trapped the rays, and they built them into the substances that kept all things alive. But they knew that their sun was not God.

To the great green beings, God, the ultimate God, was Energy.

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Robert Young is a master at a certain type of story that blends speculative and starkly realistic fiction, for example the grim tale below concerning a man who listens to commands and does unpleasant things...

PRNDLL

by ROBERT F. YOUNG

Pick up girl!

The command shocked Keller. It had been uttered in a guttural voice whose seeming source was his own mind. He had just got on NYS 90 and was heading home after a Saturday stint at the office. His dashboard clock registered 5:23 P.M.

He saw how white his knuckles had become, and he forced himself to relax his grip on the wheel. Instantly his hands began to tremble. He became aware of a faint buzzing in his ears. Beyond the hood of his Caprice the throughway unrolled into pale-gold distances beneath a pale-blue October sky, late-afternoon traffic flowing smoothly on either side of the attenuated island of the mall.

Pick up girl!

This time, the command was followed by pain — a blinding pain that exploded in Keller's mind like a fragmentation grenade made of crimson glass, then diminished to red mist. He nearly lost control of the Caprice.

Gradually the mist dispersed. He heard the voice again: *That was sample of what you get if you disobey!*

"Who are you?" Keller whispered.

No answer.

Instinctively he took the next exit. It brought him into one of the southern arteries of the city, where he joined the in-going traffic flow. He wondered desperately if he'd gone insane.

Why you not find girl yet?

Give me a chance, Keller pleaded. *This is a bad time of day. Later on—*

Later on will not do! Must have girl now! Remember pain?

Keller shuddered. *I'll do my best. But picking up a girl isn't all that easy.*

Who you think you fool? You

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chaser. Picking up girls your specialty. Why you think I choose you?

Keller sighed. *I said I'll do my best.*

You better. And you better get good girl too. Virgin, if possible.

Keller concentrated on his driving. Maybe if he kept his mind occupied, the voice would go away. Meanwhile, he would look for a girl. He didn't dare not to.

He had been passing through a middle-class residential area. Now, as he grew closer to the city's core, the houses gradually gave way to business places. There were numerous bars. When he spotted one that looked less inauspicious than the others, he parked and went inside. He drew a blank. Outside again in the slanting October sunshine, he looked up and down the street. Late shoppers were climbing in and out of cars, going in and out of delicatessens and grocery stores. Buying booze, mostly. Sixpacks for tomorrow's Buffalo Bills game. He felt terribly, horribly alone. Back behind the wheel of his Caprice, he rejoined the traffic flow and stayed with it till he spotted another bar that might conceivably contain an unescorted clean-cut American girl with a still intact hymen. He parked and went inside. A couple of Saturday-afternoon drunks were playing pool, a tired-looking man in a business suit was reading the afternoon paper, and a pair of middle-aged housewives were sipping screwdrivers. The barmaid was fairly attractive and reasonably young, but she gave Keller a stony stare over the whiskey and water she brought him, and he knew that propositioning her would be a waste of time.

Back behind the wheel of his Caprice, back in the traffic flow, sunlight ricocheting from the burnished hood into his eyes, he asked, *What happens if I can't find a girl?*

For answer, he received a second sample of the red pain. But it was much milder than the first, and, moreover, the two whiskies he'd drunk had lent him a courage of sorts. *What's your name?* he demanded.

A pause. Then, *P R N D L L.*

That's not a name. You read it off the automatic shift.

It will do.

Who are you? What *are you?*

No answer.

Whatever it was, whoever it was, it could see through his eyes and could read his thoughts. At least it could read his thoughts when they were mentally expressed in words. But could it do so if they weren't Keller wondered. If he were to think the way he did most of the time, in series of images rather than in words, would he be able to

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preserve his intellectual privacy?

To find out, he visualized himself ignoring a bevy of available girls, U-turning the Caprice, returning to NYS 90 and resuming his journey home. Then he waited.

No reaction.

Apparently P R N D L L's powers were limited.

Keller was about to try another bar when out of the corner of his eye he glimpsed a green Mustang standing next to the curb with its hood raised and a tawny-haired girl leaning over its exposed engine. The shot was a long one, but he had to play it. He backed into the first empty parking space he came to, forced himself to sit perfectly still till a quantity of his aplomb returned, then got out of the Caprice and walked back. The Mustang was still there, and so was the girl.

Keller dressed just behind the times. He did this deliberately, knowing that were he to keep abreast of them they would betray him. Today he had on a white turtleneck, a maroon blazer, gray-checked flare-slacks and black buckle-strap boots. The combo lent the exact effect he wanted: that of a seasoned man of the world, almost but not quite past his prime, plainly confident enough of his prowess to disdain catering to the calculated vicissitudes of fashion. He did not wear a hat; he never did. His hairline, although it had receded, was still lower than some men's half his age, and what few gray hairs he had contributed rather than detracted from his image.

The girl half turned, looked up at him. Blue eyes went well with the long tawny hair. Her face was rather thin. Nice upper lip, though, and a mouth that was neither too wide nor too babyish. Trim waist. Nice legs. No wedding band as far as he could see. She was wearing a medium-short green skirt, a yellow pullover and brown kick boots.

"I turn the key and nothing happens," she said.

He gave her a reassuring smile. "I'll take a look."

He checked the battery terminals, found both clamps to be tight. The battery was a new one, but he checked the cells to make sure. The water level was down, but not enough to matter. Finally he checked the tension of the alternator belt. The give was about half the length of his thumbnail. He straightened. "It's probably your starter solenoid," he said.

"Can you fix it?"

"Not without the part. Probably not with it, either. You need a mechanic, and mechanics have a thing about working weekends. Do you live around here?"

She shook her head.

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He hadn't thought she did. "There're two things you can do," he continued smoothly. "You can climb in my car, and we can start visiting service stations on the 1000-to-1 shot we'll find one operated by a competent mechanic who has the part in stock and who'll be willing to leave his place of business long enough to do a repair job. Or you can lock up your car, leave it here till Monday morning and let me drive you home."

She looked at him, at his eyes mostly; then she looked at the engine. Finally she looked at him again. "I live about forty miles from here — just this side of North Falls. How far would that be out of your way?"

"Not far," he lied.

She looked once more at the Mustang's engine. Then she slammed down the hood, got her purse out of the front seat and locked both doors. "I insist that you let me buy you some gas."

"Nonsense. I've got a full tank." (It was only half full, but he didn't want to risk stopping at a service station: the operator just *might* be a mechanic, just *might* have the part and just *might* be willing to take on a repair job.) "My name's Bruce — Bruce Keller."

"Carla Banks."

She got an overnight bag out of the Mustang's trunk and accompanied him up the street to where his Caprice was parked. She climbed in beside him. So far, he'd been able to hide his nervousness quite well, but he didn't know how long he could continue to do so. The voice in his mind had been silent for some time; however, he knew it would not remain so. Worse, any moment he might be on the receiving end of another sample of the red pain.

Christ! what was he going to do?

He got a grip on himself, rejoined the traffic flow and proceeded to South Park. He took South Park to Hamburg Street, and Hamburg Street to Ohio Street. Ohio Street took him to Fuhrmann Boulevard, and he passed over the Father Baker Memorial Bridge and joined the traffic flow on the Hamburg Turnpike. To keep his mind off P R N D L L and the red pain, he told Carla about his ex-wife and about his job as copywriter with Burrow, Dare, Grebb and Evans. In return, she told him that she was attending SUNY, that she'd been on her way home to spend Saturday night and Sunday with her folks and that she probably would have got there all right if she hadn't gone way out of her way to visit a friend who wasn't in.

P R N D L L put an end to

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Keller's respite as they were leaving Woodlawn. *Have been studying girl. Will do nicely.*

What now? Keller asked.

Rape her.

Appalled, Keller gasped, "I can't to that!"

Can do. Easy.

"Did you say something, Mr. Keller?" Carla asked.

Keller shook his head.

Rape her! P R N D L L repeated. *Pull car off road!*

For Christ's sake, I can't rape her in broad daylight!

All right. Keep going. Be dark soon.

But why rape her? Keller said desperately. *If it's a piece of ass you want to be a party to, let me go about getting it the legitimate way.*

"I'm famished," Carla said. "There's a Howard Johnson restaurant just ahead — let's stop, shall we? I'll treat. Turn right at the traffic circle."

YOU KEEP GOING! P R N D L L screamed.

No, Keller said, slowing. *If I don't humor her, I may blow the whole thing. I've got to wait till dark anyway.*

Easy for you to wait! PRNDLL howled. *Lay a new girl every other night. Me, hundred of nights in space since last time. Am horny as hell!*

Keller was incredulous. *How did you get in my mind?*

Am not in your mind. Am in ship high, high, high above. Hovering. I focus teach-beam on school, assimilate language. Mind-scanner single you out, say you chaser, good bet to find girl. So I tune in on you with trans-ence-phalo-electromagnetizer. You see, I see. You feel, I feel. Except pain. Pain on different channel. Ha-ha. But must work fast. Am being pursued by members of own species who say P R N D L L is sex deviate and who want to lock him back up.

You stole the ship, didn't you, Keller said.

Yes, yes. Steal. Lab ship, many instruments. Go many planets. Rape, rape, rape. Good, good, good. Now will rape again. But must wait, you say. Very will. Will wait. But only for little while.

What do you look like? Keller asked.

Little bit like you. But handsomer. Much handsomer.

Then why don't you land and do the job yourself?

Cannot. Earth gravity too strong. But am talking too much. Stop, you and girl. Eat. Meantime, here comes something so you not forget P R N D L L.

Keller's third taste of the red pain was more agonizing than the second but much less agonizing than the first. He noticed that during the few moments he experienced it, the buzzing in his

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ears was absent. Now that he thought of it, he was reasonably certain that the buzzing had been absent during the previous two times. The conclusion was obvious: the buzzing was a side effect of the artificially induced telepathic contact P R N D L L had established, and each time the alien administered the pain he broke the contact, because, feeling everything Keller felt, he would feel the pain too.

He might be even more susceptible to it than Keller, in which case a massive dose might kill him.

H'm-m, Keller thought.

"It may well be," said Carla, between bites of her ham-on-rye and dainty forkfuls of potato salad, "that 'Babylon Revisited' was Scott's best short story, but I much more enjoyed his 'Bernice Bobs Her Hair.' Our English lit. instructor, by the way, is Irish to the bone. On the side he does book reviews for the *New York Times.* He dotes on Hibernian writers and drools whenever he brings up Molly Bloom."

"Did you ever read *The Five Little Pepper* books?" Keller asked.

Carla blinked.

"It's a juvenile series," Keller elaborated. "Early twentieth century. I have a thing about them, you might say. I always think that if I ever find a girl who's read them, even one of them, she'll be extra special."

"I read a *Nancy Drew* book once," Carla said.

"I'm not surprised. I'm not surprised at all. It's almost the same thing."

Carla finished her sandwich, chewed and swallowed a final forkful of potato salad, pressed a paper napkin to her lips. She looked at him shrewdly. "Your ex-wife — did *she* ever read any of *The Five Little Pepper* books?"

"No, I don't think she ever did."

"You never *asked* her?"

"You have no idea what my marriage was like. For the last half of it, my wife and I were locked in mute and mortal combat. I can't remember what it was she stopped speaking to me about, but after a few months of it I stopped speaking to her, and all you ever heard in the house after that was the blaring of the TV set and the slamming of doors. I took it for as long as I could, then I — I—"

"Started chasing?"

"That's a cruel way of putting it."

She regarded him keenly. "Believe me, Mr. Keller, you'll never find a modern girl who's read *The Five Little Pepper* books. You would do as well to look for a purple cow."

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Keller sighed. The ploy had never failed before. Clearly, Carla was made of more sophisticated stuff than her sisters.

He left half of his cheese-on-rye, finished his coffee. The buzzing in his ears blurred the ambient clatter of dishes and the murmur of voices. It served as a constant reminder of his predicament and had destroyed what little appetite he'd had.

Christ! what was he going to do?

If he told Carla to get lost, he'd probably receive a dose of the red pain that would blast his brains loose. And if he survived it, he'd either have to retrieve Carla or start looking for another victim.

If he went to the police and told them to lock him up, he'd have to provide them with a valid reason, and the only reason he could provide them with was that he was under the control of a rapist from outer space. It sounded worse than a low-budget science-fiction movie, rated X. He still only half believed it himself.

What was he going to do?

To the maximum extent possible, he had been confining his thoughts to images. Presently a picture of a mountain lake whose mirrorlike surface reflected a thousand stars took shape in his mind. He stared at if for a long time, at a loss to understand where it had come from and what it represented. Finally it faded away.

The shadows were long and cool when he and Carla left the restaurant and climbed back into the Caprice. *Now we get down to the brass tacks,* P R N D L L gloated.

Wearily Keller backed out of his parking place, returned to the traffic circle and got on Camp Road. After crossing Highway 20, he headed east on 62A. "I was going to give you directions," Carla said, "but you seem to know the way. Apparently you've been to North Falls before."

"I went through there once. Why did they build the business section on that rocky hillside instead of in the valley down below?"

"Maybe so they could fight off the Indians better."

Despite her levity, he detected a faint tautness in her voice. He could understand why she might be nervous; after all, she'd known him for less than two hours. He wanted to reassure her, to let her know that he was a gentleman first and a chaser second, and that she had nothing to fear from him. But he couldn't — not with P R N D L L running the show.

What the hell was he going to do?

He *couldn't* rape her. Not even if his life depended on it.

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And his life *did* depend on it.

Be dark soon, PRNDLL said.

Very soon. The sun, red and distended, showed occasionally between the hills, through the gold and red and russet foliage of the trees. Keller looked sideways at Carla. Her tawny hair had a crimson cast; she seemed bathed in blood; surreal.

She sensed his sideways stare. "Cat got your tongue, Mr. Keller?"

He jostled his thoughts, tried to free them from PRNDLL's telepathic tentacles. He turned on the radio, punched the selectors till he got music. Hillbilly. "Country," they called it now. "Like to dance?" he asked.

"I'd love to, sir," she said, "but not right now."

"Can you do the fox trot?"

"Seems like I danced it once or twice with my father when I was a little girl."

The remark hadn't been intended to hurt his feelings — he knew that. She probably thought he was thirty-four, like all the others. At the most, thirty-seven. But it hurt just the same. Momentarily a reddish mist partially obscured his vision.

Dusk came. He rolled his window up. Carla had already rolled up hers. He held the Caprice at an even 55. At sporadic intervals, headlights swam out of the darkness ahead, resolved into passing cars. Entering Hillcrest, he slowed to 35. Soon the little town diminished to a handful of lights in the rearview mirror. He hit 55 again.

Is dark enough now.

I know, but I have to find a secluded place.

He drove for another fifteen minutes. He tried to think, but his mind seemed to have gone numb. Five miles beyond Saundersville, PRNDLL Said, *Stop car!*

I can't. Not—

STOP CAR!

Keller braked, pulled onto the shoulder and switched the emergency blinker on. *Look—*

I think you stall. I think I teach you lesson!

No, Keller cried. *No! I—*

This time, the pain was molten steel from a tapped furnace pouring into and swiftly filling the ladle of his mind. The crimson slag of the overflow covered his eyes, his nose, his mouth, his entire body. Screaming silently in the crimson wasteland, he clawed at the fiery lava, raised his hands for succor to heavens he could not see, to a god he had forgot. Abruptly a black pit opened beneath his feet and he was falling, falling, the redness all around him, down, down, down—

"— for a doctor. I'll get one somehow. Stay right where you are, Mr. Keller."

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Keller located her in the fading redness, reached out and seized her arm before she could slip out of the car. He realized he had slumped over the wheel, and he forced himself into an erect position. "No — no. I'll be all right in a minute."

She hesitated, then closed the door. He relaxed his grip on her arm. "Would it maybe be your heart, Mr. Keller?"

"No. Is there a place near here where I can pull off the road? It's bad business parking here."

"There's a rest area just up ahead.... I still think I should get a doctor."

"You'd be wasting your time."

"An ambulance then? I could flag down a car, tell them to call in for one."

He toyed with the idea. If he were admitted to a hospital, Carla would be safe. But P R N D L L would still be with him; PRNDLL looking at the nurses and the nurse's aides through his eyes, ready at the slightest provocation to administer the red pain. Keller shuddered. No, an ambulance wasn't the answer.

He switched off the blinker and pulled back onto the highway. When he came to the rest area, he drove into it gratefully and parked in a clearing among the trees. He turned off the engine and left the parking lights on; then he rolled down his window and breathed deeply of the night air. It was cool and damp, redolent of dead and dying leaves. He could feel Carla looking at him in the dashlight, but he did not return her gaze. Instead, he concentrated on his predicament.

It boiled down to a simple set of alternatives: he could rape the girl, in which case P R N D L L might set him free, or he could continue to refrain from raping her, in which case P R N D L L would administer another massive dose of the red pain. In the first case, he would undoubtedly go on living; in the second, he would undoubtedly die.

You want another lesson?

Let me get my breath, will you? You nearly killed me.

I give you three full rotations of the black-and-white indicator on your car's chronometer.

Three minutes.

"Are you feeling better now, Mr. Keller?"

"A little."

Perhaps there was a third alternative.

The alien instruments that were being employed to manipulate him might be beyond his comprehension, but their means of accomplishing their purpose was not. Put simply, they had adapted his mind to function as a receiver for P R N D L L's commands and for the red pain.

Two minutes.

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They had also adapted his mind to function as a transmitter. No, not just his mind — his entire body. Everything he saw, everything he felt, everything he thought — all were transmitted instantly to P R N D L L. It was true that the alien didn't respond to thoughts expressed in images, but this didn't imply that he didn't receive them; it merely implied that he didn't interpret them — either because they were too scrambled or because his mind functioned differently from Keller's.

One minute.

The red pain was transmitted from a separate source. Every time P R N D L L administered it, he severed contact with Keller so that he wouldn't experience it himself. If he could somehow be tricked into administering a massive dose of it *without* severing contact, would he be able to survive it?

In view of the fact that Keller probably wouldn't be able to survive it himself, the question was academic.

Thirty seconds.

Was there a way that the pain could be fed back to the sender without the receiver experiencing it?

Could it be *reflected?*

Fifteen seconds.

Suddenly Keller remembered the mountain lake that had taken shape in his mind back at the Howard Johnson restaurant and which he had found so puzzling. He did not find it the least bit puzzling now. He knew now that it had originated in his unconscious, that unconsciously he'd known the answer to his predicament ever since he'd deduced that PRNDLL might be susceptible to the red pain.

Ten seconds.

But was it the *right* answer? Right or not, it was the only one Keller had. He took a deep breath; then he closed his eyes and pictured the starlit mountain lake in his mind, concentrating on its mirror-like surface. It was essential that PRNDLL be infuriated to such an extent that he would act first and think afterward, if he was still able to, and so Keller chose his words carefully. Oddly, he knew exactly what to say. *You're not a sex deviate, P R N D L L. You turned rapist because on your own world you could no longer get it any other way. Because you started turning females off instead of on. Old age caught up to you, P R N D L L. You're nothing but a—*

Keller paused as the lake in his mind turned bright red. The brightness intensified, half blinding him, and he saw that it was raining down from above. Then, as suddenly as it had begun, the rain reversed itself and the brightness streamed back into the sky. An

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anguished scream sounded in his mind, abruptly broke off. The buzzing in his ears ceased.

He opened his eyes. Carla had got out of the car and was standing in the clearing. "Look, Mr. Keller," she cried, pointing. "A falling star!"

P R N D L L's ship? Perhaps. Whether it was or not, Keller was certain that the alien had administered his final dose of the red pain.

"Is this it?"

"That's the house, Mr. Keller. I still wish you'd let me buy you some gas."

Keller pulled into the gravel driveway and moved the automatic shift lever to PARK. The house was three-storied and dark. Screening it from the road were four gnarled sugar maples. Starlit fields stretched beyond, and on either side, and directly across the road, the dark mass of a barn or shed broke the monotony of other starlit fields. "No one seems to be home."

"No one is. Mom and dad still do their shopping Saturday night."

She picked up her purse and her overnight bag, opened the car door and started to get out. "Thanks thousands, Mr. Keller."

He seized her hand. "I could stand a cup of coffee."

"I'm sorry — I just haven't time. I've a date at eight thirty and I have to get ready."

Keller tightened his grip on her hand. "How long would it take you to fix one cup of instant coffee?"

"I'm really sorry, Mr. Keller, but there just isn't time. Now, if you'll please let go my hand—"

"Circles," Keller said.

"Beg pardon?"

"Concentric circles. The circle of relatives. The circle of friends. The circle of acquaintances. You can't break through them — ever."

With an abrupt movement, she pulled her hand free and got out of the car. He saw naked contempt in her eyes, knew that it had been there all along, camouflaged out of forced respect for social convention. Carrying her purse and her overnight bag, she ran across the lawn and up the front-porch steps. She got her key out of her purse and opened the door. She stood in the doorway, looking back to where Keller sat stunned in the Caprice. "Go home and soak your dentures, you old fool!" she shouted. "I knew what you wanted all along!" She stepped inside and slammed the door.

Keller got in by smashing one of the front windows and stepping through it into the living room. She was frantically dialing the phone when he entered the fluorescent-bright kitchen. He knocked the phone to the floor, base and all, and shoved her against the kitchen

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stove. She screamed. The room, the appliances, her face — all had a strange reddish cast. He tore off her skirt; when she fought him, he struck her in the stomach. She doubled up. He hit her again, on the side of the head this time, tumbling her to the floor. The alien pain was as nothing to the pain he knew now. He rid himself of it with cruel, savage thrusts backgrounded by screams, then whimpers. The whimpering got to him after a while, and he put an end to it by employing the base of the phone as a bludgeon. He went out the way he'd come in. He could see his name on the automatic shift as he backed out of the driveway and began the long trip home. It glowed mockingly in the lonely darkness of the car—

P R N D L L...

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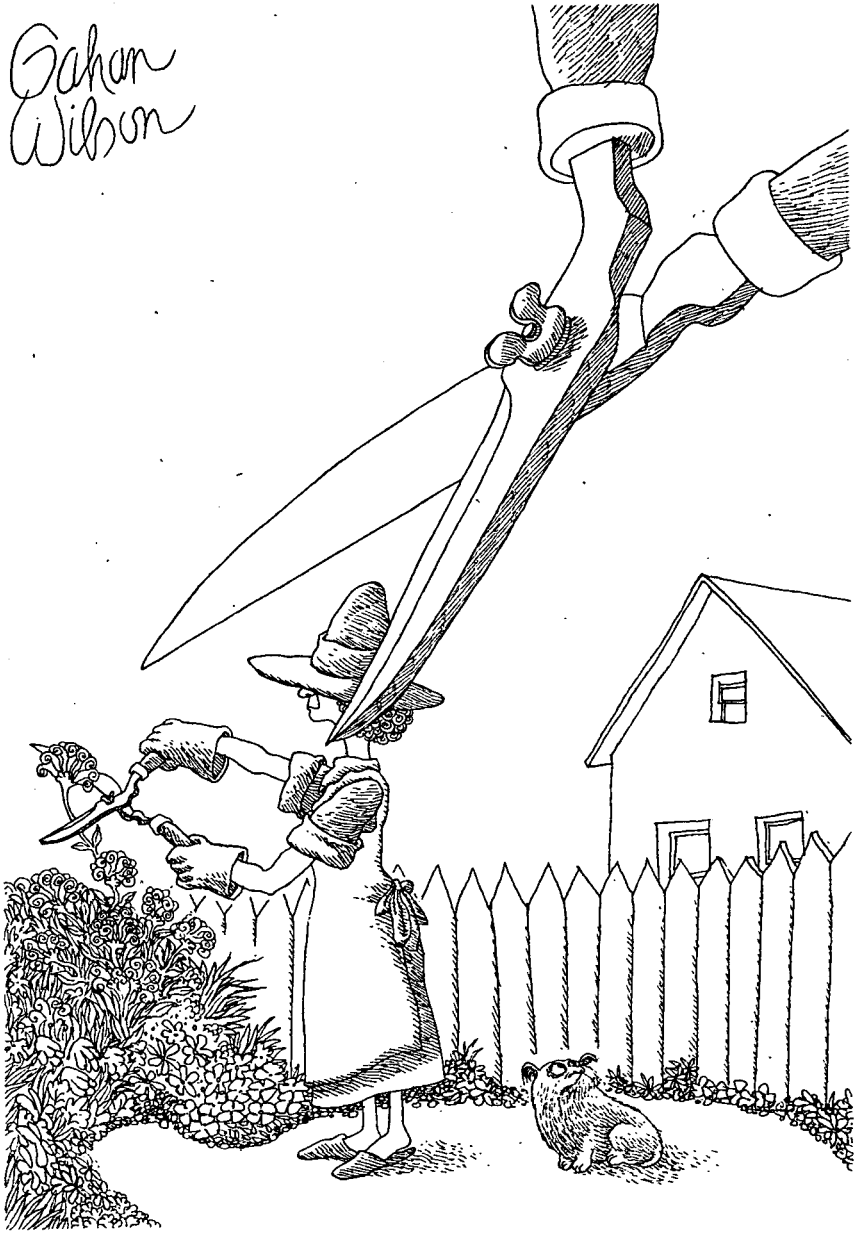

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There is, they say, a conflict between storytelling and art. At times I've said it myself, although not in so many words. Most critical lexicons are preloaded with the sort of natural bias that assumes fiction is written the way it reads. "Storytelling" is banged out helter-skelter at a breakneck pace, one assumes because that's how the narrative gallops through one's receptors, whereas "art" is allusive, intricate, "intellectual" and careful. "Storytellers" use short, sharp sentences, and, with the important exception of one genre, plain words: In sword-and-sorcery novels, they will at times be required to be so poetastic as to verge on the incomprehensible. But after all, once you've described one filmy-robed priestess at a verdigrised fane, you've described 'em all, and the reader knows what is meant. Creators of "art," on the other hand, will sometimes not use sentences at all, or at least not in any immediately significant sequence, and have larger vocabularies both of words and of typefaces. So how can there not be antipathy?

Well, of course, that swordplay scene over there may be in its tenth draft by the time its clangings and cries reach your inward ear, whereas that novelette over there which takes you all day to read, and underpins an entire new critical

ALGIS BUDRYS

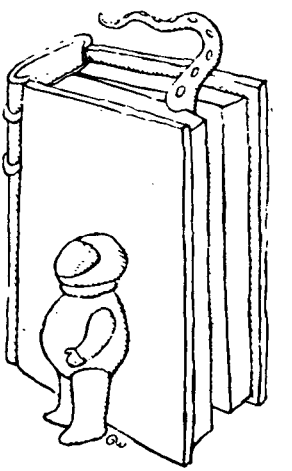
Books

Stellar Science Fiction Stories #2, Judy-Lynn del Rey, editor, Ballantine, $1.50.

The Long Arm of Gil Hamilton, by Larry Niven, Ballantine, $1.50.

Gate Ivrel, by C.J. Cherryh, Daw Books, $1.25.

The Third Industrial Revolution, by G. Harry Stine, Putnam, $7.95.



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school, may have been dashed out overnight by some starveling in a dead heat with an eviction notice, glugging at cheap wine to keep his imagination fluent. Nor however does this mean that one writer's tenth draft is as effective as another writer's first, or the same writer's first on another day.

What it boils down to is *perceived intent.* When a reader sees a story written in nonsequential paragraphs, or introduced by a quote from Hesse, or straightforwardly told but concerned with someone named "he," who in great detail wanders within a megalithic structure that smells and looks like the inside of a guitar case, there is reason to believe the writer intends a message — an appeal to the intellect, cloaked within the ostensible narrative. When, however, it is seen that the hero's concern for the oncoming sword is occasioned by the sword's interposition of an obstacle between him and the golden altar, this is an appeal to the emotions.

In our culture — almost uniquely so, my limited education confidently tells me — intellect and emotion are seen not only as opposed but as bitterly opposed; one as Good and the other as Evil. This creates certain consequences in our fiction — and in its appraisal — which are not founded on any objective material in the work. We tend to slight the careful craftsman who either wittingly or of an open heart teases and rubs at the scene of swordplay until all dross is smoothed away and the underlying message of sympathy is revealed clear to the reader's subconscious. We tend to overvalue the cocksure tyro, too much inspired to be hindered by common p's and q's, who takes out insurance beforehand by clothing an allegorical opening paragraph in eccentric syntax, or by concerned allusion to purely topical matters that will be unintelligible a year hence, by which time our artist will be wondering grumpily where all the cocktail parties have gone.

We tend as well to assume that who writes what we like is careful, and who writes what we don't is heedless. But in any event the fact is generally that those who write, or publish, or extol the story which appears intended as entertainment are in our day and time noticeably defensive in the pervading presence of those who appear to be doing otherwise.

Which brings us first to *Stellar #2*, second in a series of original anthologies aggressively presented by its editor and publisher as an outpost of old-fashioned story-telling SF in a wicked world full of "mere messages wrapped up in inflated and often self-conscious

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prose."*

It is a showy and effective tactic, often used deftly by people named del Rey, to invert the attacker's argument before he makes it: "storytelling" is here Good, "art" is Evil. Yet obviously one would not make such a point of the annual *Stellar's* unyieldingly presented editorial policy if it were a fashionable one. "I want ... beginnings, middles and — most important — ends!"* J-L del Rey declared in her original letter to literary agents, further defining a perceived difference between the majority of available work and the sought-after minority.

Ultimately, the product of this effort proved to be a solid moneymaker. Sneer if you must, but since advertising and promotion budgets for original paperbacks are nil, the industry has always counted reader dollars as votes in a continuing poll of reader preferences. A number of questions remain open. One series I like goes: Is this an endorsement of the ostensible work, or of publishing from the underdog position? If one asserts that the work sold on merit, spurning the suggestion that readers will briefly endorse experimentation for novelty's own sake, how can you propose that the fashionability of "experimental art" stems merely from a reader willingness to dabble briefly? And, all else aside, are these stories *really* different — furthermore, in the way you say they're different?

That last question is a winner; it's the one Harlan Ellison can't answer anent the *Dangerous Visions* series, either, thus indicating strongly that a question doesn't care who wields it, or against what.

We shall attempt here today to tell you what I think; that's as close as we can come to objective reality, and that's a rather long jump from where I'd be comfortable.

Ordinarily, I despise editorial comment which suddenly goes second-person and mealymouths "It's *your* magazine, Dear Reader," or "It's *your* field to make of what you will." Nonsense. It's the field supported by the resultant of hundreds of thousands of opinions, or at the very least so the editors and especially the publishers believe. *Every* strong-willed editor has always found an enthusiastic audience; it is the timid and the vacillatory who talk of "finding *the* audience and serving *its* interests." But I am about to be falsely accused of digressing. What I mean to say quickly is that in this case, it *is* ultimately up to you whether the Judy-Lynn del Rey

* *Quoted from the introduction to* Stellar #1, *an outstanding commercial success.*

* *ibid.*

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position is viable. Not only do the early returns indicate that it is, but by extension all this "art"/"old-fashioned storytelling" stuff is likely to be the bunk. Because it appears likely that in fact while we might not know much about old-fashioned storytelling, we know what we like.

There are eight stories in *Stellar 2*: Isaac Asimov's long, moving robot story, "Bicentennial Man," which may well be as much the star of this volume as Clifford D. Simak's "The Brich Clump Cylinder" led *Stellar 1*; "Mistake," a very short snapper from Larry Niven which could as readily have been replaced by any other little notion; "Stuck With It," a rather routine and over-long but nevertheless genuine Hal Clement story; "Song of Dying Swans" by Jack C. Haldeman II, and "Sic Transit: A Shaggy Hairless-Dog Story" by Steven Utley and Howard Waldrop, of which the first is as slight and predictable as the Niven and the second is imitation Lafferty bent engagingly in the service of a message, but a message nevertheless, with a gagline rather than an ending; "Tindar-B" by Patrick G. Conner, as bad an imitation Nat Schachner story as ever you'd want; and two rather interesting entries which, without disservice to the Asimov, will each develop its own coterie of admirers. One is James White's "Custom Fitting" — a simple, very English tale about the tailor who must design acceptably Terrestrial garb for a centauroid ambassador from the stars to the Court of St. James; a gem, gentle readers, a veritable gem — and the other is "Unsilent Spring," by Richard Simak, a chemical engineer, and his father Clifford.

The premise in "Unsilent Spring" is that we have become dependent on DDT traces, and that those of us who are listless, plagued by vague muscular aches, irritable, overeating — in short, most of us in real life — are suffering from the systemic effects of DDT withdrawal under the regulations which have prohibited its use.

The story is told through one of Cliff Simak's patented characters — the conscientious old country doctor — and faithful readers of *Astounding* and the old *Galaxy* will recognize him at once. What Richard has contributed, in addition to the premise and the biochemical rationale, is that air of chilly verisimilitude.

As a service to F&SF readers, this column is pleased to report that our inquiry of the authors reveals that our *malaise* must be ascribed to other causes — the authors fudged just enough to make the premise purely fictional. But I will bet you that DDT-withdrawal will be a topic of serious, in

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fact grave and sometimes impassioned debate in pseudoscientific circles just as soon as word reaches them.

A good anthology by its lights, and a good issue of a solid magazine, were it one. The Asimov is right up there — as good a novelette as he's written in a long time, from the same armamentarium that yielded "The C-Chute" and "The Martian Way." Having it be a Robotics Laws story makes it even better, of course, and the Clement, and the Clifford Simak style add their freight of nostalgia.

But the White, excellent in all its respects though it may be, bears no trace of that "old-fashioned" touch. "Tindar-B" is relentlessly bad, reminding its reader of every 'living planet' yarn he has ever read, combined with the artificial conflict plot about the pale, despised 'observational specialist' which was old when van Vogt wrote "Discord in Scarlet," or whatever he called it, and equipped with a resolution which the editor allows the writer to impose without justifying. This seems a direct contradiction of all the policy assertions remaining unshattered after the Niven, the unshaggy dog story — which is delightful where it recalls Lafferty — and "Swans," which is another banal narrative with a banal arbitrary ending.

It's hard, hard, to put together a bulletproof issue, much less a bulletproof policy. Would we be best off if we simply read the stuff and never talked about it?

The Long Arm of Gil Hamilton, by Larry Niven, for instance, is blurbed and bannered by Ballantine as a tough book-length creation about menace, while inside the author contributes a long, thoughtful essay on the nature of cerebral SF detective fiction, which is more — but not altogether more — like what these three coupled-up novelettes are.

There is nothing wrong with a creative craftsman's having a rationale for his work, either in advance or after the audience shows some sign of interest. (Audiences frequently demand, not too gently, that their favorite writers *explain* themselves. This gives rise to a lot of stuff that Hercules would divert a river through. But some of it is useful and much of it is entertaining in some way.)

Be that however it is, Gil Hamilton is an operative of ARM, a 22nd-century investigative body situated in Niven's "known space" universe with its Belters and its transplant organleggers. Hamilton is an ex-Belter who lost his right arm in a mining accident. Thereafter, he developed an "imaginary" telekinetic arm which allows him a

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limited repertoire of stunts and some unexpectedly deadly capabilities. He also returned to Earth, where socialized medicine gave him a replacement transplant actual arm.* Thrice-armed, Hamilton solves two lockroom puzzles and one in which the known criminal is ingeniously hidden. In between, he gets a little of what we in Spillane-space call "tail," drinks a little, and gets shot at and variously menaced, but that's all persiflage. Niven's interest is clearly in pulling off the difficult stunt of recounting formal 'tec puzzles in an imaginary universe.

It seems to me that several times I found myself either skipping over paragraphs of ratiocination or wishing that I had; nevertheless, these stories are entertaining, obviously the products of an interesting intelligence, and integral to the history of "known space," a canon of which many Niven fans, myself among them, are quite fond. One could buy them as tough 'tec or as John Dickson Carr brought forward on his ear and be happy either way. As entertainment, they're quite artful.

* *Ballantine's advance promotional blurbs for the book refer to "the famed one-armed operative of ARM," thus proving once again how carefully PR staff people sample the precious stuff they sell.*

On your newsstands, Dear Readers, is a DAW book with a bluish cover, written by C. J. Cherryh. It depicts the obligatorily chunky barbarian female wielding a sword, fronted by a glowering bronzed retainer. The title type is almost impossible to decipher; what it spells, one finds, is *Gate of Ivrel.* Never mind that you never heard of Ms. C. J. Cherryh before. Donald A. Wollheim, the veteran editor who made a novelist out of Phil Dick, who found Mark Geston, and in fact created Ace Books essentially out of his own imagination before deservedly striking out on his own and leaving Ace to be picked over by scavengers, has done his trick again. Cherryh — who benefits from a glowing and commendably unenvious special introduction by Andre Norton — is a born storyteller.

While not of the "magnitude of Tolkein and Merritt" — blurb-writing makes strange bedfellows — or as intricate a worker as Le Guin, Cherryh produces a "novel of barbarian worlds" fully worthy of the company of Leigh Brackett or C. L. Moore, far less slapdash than Merritt, considerably less boring than Tolkein, and, while not impossible to put down, very, very easy to return to.

The world of the novel might — might not — be Earth; rather, one

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would guess that Morgaine has come to this world next after leaving Earth behind in her infinite journey through the gates that span the universe. She is the last of her band of a hundred whose mission can only end in death, and again one hears an echo of Camelot, perhaps only because one would like to.

Her story here is told through Vanye the warrior, native outcast of this world, who follows her at first because he has no choice, and then because he has no heart to leave her. Together and sometimes separately, they pursue the road to the Gate of Ivrel through lands with what to me are vaguely Welsh names, among clans and nations which have rightly feared and cursed Morgaine's memory for a hundred years, and in which nearly every man's hand is against the bastard Vanye, who slew one of his brothers and maimed the other, driving his father and his father's wife to die.

There is of course the question of how long Cherryh worked on this manuscript, and how much labor she might expend on the next. Her sense of pacing is not sure; too much is spent on a minor incident, not enough on another. Her ability to create tension is unpracticed; she has only one means of surprising her protagonists, and that is to always underplay. That is not a

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trick to rely on throughout. And her supporting characters can be seen to be reacting arbitrarily. In particular Erij, Vanye's unhanded brother, weathervanes frantically in response to Cherryh's attempts to depict duality of character, which emerge instead as a rather forced attempt to give Vanye an uncle, a brother, and an enemy all out of the same limited cast. The exotic language, imposed on a society already complicated by caste and clan, acts to eventually bore a reader who began by attempting to follow them. All of these are apprentice faults, listed here because Cherryh's obvious underlying talents — and the immediate rewards of reading *Gate of Ivrel* — fully justify taking an interest.

If you respond at all to tales of adventure in faerie lands, I can almost guarantee you that *Gate of Ivrel* will come as a happy surprise, and that while it ain't no *Silverlock*, with portions of which it compares either directly or as if in mirror image, we can expect a mature Cherryh to be fully an equal of John Myers Myers, or a Brackett, or the Leiber of the Nehwon stories, or Jirel's singer.

Children reading her will grow to love fiction. And when they are old enough, they will be taught what's wrong with it. So goes the world and its study. Could we not all sit under a tree, each telling a tale in turn, and none to judge which of us is king and which is beggar?

For those who would enjoy a likely glimpse into a near future that most assuredly will occur, in some part at least, let me recommend *The Third Industrial Revolution*, by G. Harry Stine (Putnam, $7.95). I do not know enough science and technology, so I will not frequently impose non-fiction reviews on you. But here in one slimmish volume is something to put on the shelf between Willy Ley's *Engineers' Dreams* and Alvin Toffler's *Future Shock*, and to hand to people who ask what good all this space exploration is expected to be.

Stine is an enthusiast, and so are his editors: " ... explains what glory lies before us" is a bit toplofty for a book that explains what you can do with a perfectly round ball bearing. And at $7.95, you had better be a member of the Club of Rome before you go scattering copies around. But it's going to be a basic book at your friendly neighborhood futurology sessions, and its sweeping optimisms distill down to a hardheaded sort of encouragement for the notion that we are not, in fact, anywhere near the brink of extinction, or even as yet fairly begun on the road to the next gate.

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Alan Dean Foster is the author of several sf novels and Star Trek adaptations. His first story for F&SF, one that should please all the new shark fans in our audience, concerns a search for a Great White, one that from all the evidence would have to be almost 100 feet long...

He

by ALAN DEAN FOSTER

He came out of the abyss and out of the eons, and He didn't belong. His kind had passed from the world long ago, and it was better thus for the world, for They were of all Nature's creations the most terrible.

But still He survived, last of His kind, a relic of the time when They had ruled most of this world. He was old, now, terribly old, but with His kind it showed little. He'd stayed to Himself, haunting the hidden kingdom of darkness and pressure. But now, again, something impelled Him upwards, something inside the superb engine of Himself drove Him towards the light, something neither He nor anyone could understand.

Two men died. The reason was basic.

The rain had worked itself out and the sun was shining by the time Poplar reached the station. The building was as unspectacular as the simple sign set into the white stucco.

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DEPARTMENT OF THE
INTERIOR
AMERICAN SAMOA

He pushed through a series of doors, and checkpoints, occasionally pausing to chat with friends and co-workers. As station director, it was his obligation as well as a pleasure.

The door to his own offices was half ajar. Long ago he'd lost the habit of stopping to admire the gold letters set into the cloudy glass.

DR. WOODRUTH L. POPLAR
DIRECTOR

He paused in front of Elaine's desk. She'd arrived some six

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months ago, the first crimp in a routine otherwise unbroken for the past five years. His first reaction had been confused. He still was. She swiveled around from her pile of books to face him.

In her midtwenties, Elaine Shai had tiny, delicate features that would keep her looking childlike into her forties and fifties. Long auburn hair fell loosely in back, framing small blue eyes, a tiny gash of a mouth, and a dimpled chin. In contrast, her unnervingly spectacular figure was enveloped in print jeans and a badly outflanked white blouse. She had a fresh yellow frangipani behind one ear.

She looked great.

The elfin illusion was blurred only when she opened her mouth. Her accent was pure Brooklyn. It had disconcerted Poplar only once, when he'd greeted her on her arrival at the airport. From that point, for all it mattered, she could have chattered away in Twi.

But she bothered him.

"Well, what are you staring at, Tree?"

"You must be using a new shampoo," he said easily. "Your follicles are in bloom."

She grinned, touched the flower lightly. "Pretty, isn't it? He's in your office. I got tired of him staring at the door. Strange old bird. Never took his hands off that package. But you know these small-island Matai better than I do, Doctor. Stuffy."

"Proud, you mean."

She popped her bubblegum at him. That was her one disgusting habit. He pushed open the door to his office.

As always, his first glance was reserved for the magnificent view of the harbor out his back window. He was always afraid he'd come in one day and find a view of downtown New York, the one from his old office at Columbia. Reassured, he turned to greet the man seated in front of his desk.

Standing in front of his chair, he managed to take a fast inventory of the papers and envelopes padding his desk while at the same time extending a greeting hand.

"Talofa," he said.

"Hello, Dr. Poplar. My name is Ha'apu." The oldster's grip was firm and tight. He sat down when Poplar did.

The director stared at the man across from him. On second and third glance, maybe he wasn't so old. That Gauguinish face, weatherbeaten and sunburnt, could have as well seen forty summers as seventy. The few lines running in it were like sculpture in a well-decorated home, placed here and there strategically, for character, to please the eye. The hair was cut short and freckled with white.

The Matai retained a taut,

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blocky build. Ropes of stringy muscle flexed when his arms shifted. He matched Poplar's 175 cms. in height.

"I've come a distance to see you, Dr. Poplar."

"You sure have, all by yourself, if what they tell me is true. I'm flattered." He changed to his best fatherly-executive style, which was pretty sad. "How are things on Tafahi?"

The old chief shook his head slowly. "Not good. Since He came."

"I'm sorry to hear that," replied Poplar in what he hoped was a convincing display of sincerity. Privately he didn't give much of a damn about daily life on Tafahi. "Uh ... who is 'He'?"

"I have heard over the television that you are a Doctor to the Sea. Is this true?"

Poplar smiled condescendingly. "I can't cure storms or improve fishing, if that's what you mean." Educational television had performed miracles in reaching and teaching the widely scattered Polynesian and Melanesian peoples throughout the Pacific.

It was Ha'apu's turn to smile. "I still think we may be better at that than you." He turned somber again. "By Sea-Doctor, I mean that it is your business, your life, to study what the ocean is, what lives in it, and why Tangaroa does the things he does."

"That's a very astute summation," replied the director. He felt the sea-god himself would have approved, and his estimation of this man's intelligence went up a notch.

Ha'apu seemed satisfied. "So I believed. I wanted to make certain I understood. My mind takes longer to think things than it once did. What I have brought to show you ...." he indicated the small package in his lap, "... could be understood and believed only by such a person."

"Of course," said Poplar, sneaking a fast glance at his watch. He wished the chief would come to the point. Then Poplar could haggle, politely refuse, kindly suggest the chief try the usual tourist markets downtown and wharfside, and he could get to work. He'd found one new shell this morning that .... But he didn't want to be rude by hurrying the conversation. Some Matai were easily insulted. And he wasn't famous for his diplomatic manner.

Ha'apu was working at the small package. It was tightly bound in clean linen and secured with twine.

"But first you must promise me you will be careful of whom you speak to about this. We have no wish to endure an assault of the curious."

Poplar thought back to the moaning jetliner that had passed

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overhead this morning, crammed to the gills with bloated statesiders eager for a glimpse of the quaint locals betwixt brunch and supper, and applauded the Matai's attitude. He wasn't all that naive.

"I promise it will be so, Matai."

Ha'apu continued to work deliberately with the knots. "You are familiar with Niuhi?"

"Yes, certainly." He peered at the shrinking pile of cloth and twine with renewed interest. A good carving of Niuhi would be something of a novelty. At least it wasn't yet another dugout or tiki.

"Then you will know this," said Ha'apu solemnly. He removed an irregular shaped object and placed it carefully on the desk in front of the director.

Poplar stared at it for a long moment before he recognized it for what it was. The realization took another moment to fully penetrate. Slowly he reached out and picked it up. A rapid examination, a few knuckle taps convinced him it was real and not a clever fake. It wasn't the sort of thing one *could* easily fake. And besides, even the simplest islander would know he couldn't get away with it. He brought it up to eye level.

"Ye gods and little fishes," he murmured in astonishment.

It wasn't a carving.

It was a tooth. And it was quite impossible.

The tooth was almost a perfect triangle. He reached into his desk and brought out a ruler, laid it alongside the hard bone. Slightly under 18 cms. long, about 14 cms. wide at the bottom and over five thick. The base was slightly curved where it fit into the jaw. Both cutting edges were wickedly serrated, like a saw. He stared at it for a long, long time, running his fingers along the razor-sharp cutting edges, testing the perfect point. A magnifying glass all but comfirmed its reality. That failed to temper his uncertainty.

"Where did you get this, Ha'apu? And are there any more?" he asked softly.

"This was taken from the wood of a paopao." The Matai smiled slightly. "There is another."

It took Poplar about thirty seconds to connect this with what the chief had told him earlier. Einsteinian calculations aside, he could still add up the implications. He leaned back in his chair.

"Now Ha'apu, you're not going to try and convince me that this tooth came out of the mouth of a living Great White!"

The chief began slowly, picking his words. "The Doctor is very sure of himself. About three weeks ago, two young men from my village were out fishing an area we rarely visit, rather far from Tafahi. There is better fishing in other directions,

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and closer to home, but they wished also a little adventure. They did not return to us, even hours after nightfall.

"All of the men of the village, including myself, set out to search for them. We were not yet worried. We knew where they had gone. Perhaps their boat had been damaged, or both had been injured. There was no moon that night. One cannot see far onto the ocean at night by only torch and flashlight. We did not find them.

"What we did find, floating by a small reef and still anchored to the coral, was the rear half of their paopao. It had been snapped in two, Dr. Poplar. That tooth you hold now in your hand was buried in the side of the wreckage. Television and great jet airplanes admitted, Doctor, old beliefs still linger on most of the islands. I am the most educated man in my village and proud of my learning. But this frightened me. We have lived with the sea too long to doubt what might come from it. We put on an exhibition of rowing that could not be matched, Dr. Poplar, in any of the Olympic games.

"It was very quiet on Tafahi the next day. Fishing, a daily task for us, had grown suddenly unpopular. I pointed out there was still a chance to recover the bodies or ..." he winced "... parts of them. But no one would return to that reef.

"I went alone. It is a small atoll ... very tiny, not on any but the most detailed of your maps, I should guess. That was where our two men had gone to fish. To the northeast of it, I believe, the ocean bottom disappears very fast."

Poplar nodded. "The northern tip of the Kermadec-Tonga Trench runs across there. In spots the sea floor drops almost straight down for, oh, 3500, 3600 fathoms ... and more."

"As you say, Doctor. The sun does not go far there. It is where He dwells.

"I anchored my paopao behind the protection of the little reef, safe from the breakers on the other side. It was where the men had anchored. Swimming was not difficult, despite a slight current."

"If you thought you might encounter a big Great White prowling around down there, why'd you go in?" asked Poplar shrewdly.

The chief shrugged. "My family have been chiefs and divers for enough generations for my genealogy to bore you, Doctor. I respect Niuhi and know him. I was careful. Anyhow, someone had to do it. I did not swim too long or too deep. I had only mask and fins and did not use the weights. I also have respect for age, including my own.

"The small lunch I had brought with me did not take long to eat. The afternoon was long, the sun

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pleasant. I dove again.

"I had given up and was swimming back to the boat when I noticed a dark spot in the water to my left. It was keeping pace with me. The water was clear, and so it must have been far away to be so blurred. It paced me all the way back to the boat. Despite the distance I knew it was Him."

"Mightn't it have been ...?" Poplar didn't finish the question. Ha'apu was shaking his head.

"My eyes, at least, are still young. It was Him. I could not be absolutely certain He was watching me. I doubt it. Faster or slower I did not swim. A sudden change of stroke might have caught His attention. But I was glad when I was in the bottom of my boat, breathing free of the sea.

"I waited and watched for a long time, not daring to leave the small shelter of the reef. Once, far away, I think I saw a fin break the surface. If it was a fin, it was taller than a tall man, Doctor. But it might not have been. It was far away and the sun was dropping.

"I have only been truly afraid, and I say this honestly, a few times in my life. To be alone on the sea with Him was terrible enough. To have been caught there in the dark would have frozen the blood of a god. Then I knew the legend was true."

"What legend?" asked Poplar.

"Whoever sees Him is forever changed, Doctor. His soul is different, and a little bit of it is stolen away by Him. The rest is altered forever."

"In what way?" Poplar inquired. Better to humor the old man. He was interested in the damn tooth, not local superstition.

"It depends so much on the man," the Matai mused. "For myself, the sea will never again be the open friend of my youth. I ride upon it now and look into its depths with hesitation, for any day, any hour, He maybe come for me.

"My people were surprised to see me. They had not expected me to return."

Poplar considered silently. "That's quite a story you want me to swallow. In fact, it's pretty unbelievable."

"A strange thing for you to say, Sea-Doctor," smiled Ha'apu. "But I do not blame you. Come back with me. Bring a good boat and your diving tools. I will show you what remains of our young men's paopao. And then I will take you to the spot where I saw Him, if you dare. He may have returned to the deeps. Surely this is a rare thing, or He would have been seen before. There must be a purpose for it."

B.S., M.S., Ph.D., he thought hard for a moment. The legend stuff was all bushwah, of course. But the tooth ... he tried to visualize

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its owner, and a little shiver went down his spine. This business about soul-changing ... ridiculous! ... *he*, frightened of another fish?

"This tooth could be very, very old, you know. They've been found before, like new. Although," he swallowed and cursed himself for it, "not quite of this size. According to the best estimates these creatures became extinct only very recently."

"Creatures? There is only one of *him*," said Ha'apu firmly.

"You could fake the ruined outrigger," persisted Poplar.

"To what end?"

"I don't know!" He was irritated at his irrational terror. Goddamnit, man, it probably doesn't exist! And if it, by some incredible chance, did, it was only another fish.

"Maybe you want to attract those tourists you profess to dislike. Or want to try and wangle some free diving equipment. Or simply want to draw some attention to yourself. Who knows? But I can't take that chance." He took another look at the tooth. "You know I can't, damn you. Where are you staying while you're on Tutuila?"

"With friends."

"Okay, we have a couple of cruisers here at the station. They're not in use just now. Down at the very end of Pier Three. The one we'll use is called the *Vatia*. You can't mistake it. The other, the *Aku-Aku*, is longer and has a flying bridge. Meet me at, oh, ten tomorrow morning, on the pier. If you get there ahead of me, tie your boat to the stern." He stopped turning the tooth over and over, feigned unconcern. Inside, he was quivering with tension.

"May I keep this?" He knew what he was asking. Did the chief?

"There is another still set in the paopao. Yes, you may have this one. For your children, to remind them of when you were young."

"I have no children. I'm not married, Ha'apu."

"That is sad. The other tooth must remain with us. It will not ..." he said, in reply to the unposed question, " ... ever be for sale."

Poplar was seeing his name blazoned across the cover and title page of every scientific journal in the world. Below the name, a picture of himself holding the largest tooth of Carcharodon megalodon ever found. He might even manage to include Ha'apu in the picture.

He leaned over the desk, began shuffling papers.

"Good-by 'till tomorrow, then, Matai Ha'apu."

"Tofa, Sea-Doctor Poplar." The chief gathered up his wrappings and left quietly.

He began going over the supplies they'd need in addition to what was standard stock on board

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the *Vatai.* Plan on being gone at least a week, maybe two. Get him out of the office, at least.

Elaine walked in, strolled over to the desk and leaned across it. That finished any attempt at paperwork. When she noticed the tooth in front on him, she almost swallowed her gum.

"My God, what's that?"

"You're a master's candidate in marine bio. You tell me." He handed it to her.

She examined it closely, and those pixie eyes got wider and wider.

"Some gag. It looks like a Great White's tooth. But that's absurd."

"So was the coelacanth when it turned up in 1938," he replied evenly.

"But it *can't* be Carcharodon!" she protested. "It's three times too big!"

"For Carcharodon carcharias, yes. Not for Carcharodon megalodon." He turned and dug into the loosely stacked books that inhabited the space between desk chair and wall. In a teacher-student situation, he was perfectly comfortable with her.

"You mean the Great White's ancestor? Well, maybe." She took another look at the unreal weapon in her hand. "I recall one found in Georgia about half this size. And there was a six-incher turned up just a few years ago. Extrapolating from what we know about the modern Great White, carcharias, that would mean this tooth came out of a shark ninety fee...."

"Ah-ah," he warned.

"Oh, all right. About, um, 30 meters long." She didn't smile. "Kind of hard to imagine."

"So are sharks attacking boats. But there are dozens of verified incidents of sharks, often Great Whites, hitting small craft. Happens off stateside waters as well as in the tropics. The White Death. The basis for a real Moby Dick, only ten times worse. Not to mention a few thousand years of sea serpent stories."

"You think one of these might have survived into recent times?"

Poplar was thumbing through a thick tome. "That's what that chief thinks, only to him it's a god and not a shark. The Great White prefers ocean-going mammals to fish. Probably this oversized ancestor of his fed on the earlier, slower moving whales. First the whales grew more streamlined, and then man began picking off the slower ones. The sea couldn't have supported too many of these monsters anyway. A megalodon would have a killer whale for breakfast."

"A man-eater as big as a blue whale." She shook her lovely head. "A diver's nightmare."

"The Matai who brought this

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one in says he knows where there's another, and maybe more."

"Far out. You think I might get my thesis out of this?"

"Well," he smiled, "the chief did say that according to legend anyone who sees Him is forever changed. All you've got to do is spot Him."

"Very funny."

"We leave first thing tomorrow morning, on the *Vatai*. Tenish. Now go and pack." But she was already out the door.

She was not so happy for the reasons Poplar thought.

Tourists waved from the hotel Balcony. It had been built at the point where the open sea met Pago Pago's magnificent harbor. Elaine slid her lava-lava down a little lower on one shoulder and waved back coquettishly. Poplar looked up from the wheel disapprovingly.

"Just because naked native maidens went out of fashion forty years ago is no reason for you to feel any obligation to revive the tradition for the benefit of overweight used-car salesmen from Des Moines."

"Oh, foo! For what they charge the poor slobs to stay in that concrete doghouse they're entitled to a little wish-fulfillment."

"Courtesy of downtown Brooklyn, hmm," he grinned in spite of himself. He swung the wheel hard over and they headed south-southwest. The powerful twin diesels purred evenly below deck.

Wreathed in gold-gray clouds, Mt. Rainmaker, all 530 meters of it, watched them from astern long after Tutuila itself had vanished into the sea.

The trip was uneventful, except that Elaine insisted on sleeping stark naked. She also had what Poplar felt was a childish habit of kicking her sheets down to her feet. He considered going over and replacing them, but hesitated. He might wake her and that would be awkward.

Ha'apu was clearly pleased at the situation, and there wasn't anything Poplar could do about it. Well, if she wanted to expose herself, he'd simply ignore her. Clearly she was looking for attention, and he didn't intend to give it to her.

So until he fell asleep, he spent a lot of time staring at the sterile cabin wall that separated him from the sea.

And the other wall remained equally unbroken.

Like most small, low lying Pacific islands, Tafahi was nonexistent one moment and a destination the next, popping out of the blue ocean like a cork. The white sand beach sparkled in evening sun, devoid of the usual

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ornaments of civilization ... beer cans, dog-eared sandals, plastic wrappers, empty candy papers, beer cans.

There was a broad, clear entrance to the small lagoon. Poplar had no trouble bringing the *Vatai* inside. Ha'apu climbed into his paopao, its little sail tightly furled, and paddled ashore. Poplar and Elaine followed in the *Vatai's* powerful little runabout.

"We're not here just to look for teeth, Elaine," he said abruptly. She stared at him expectantly.

"Ha'apu really thinks ... I know it sounds absurd ... that this monster is still swimming around somewhere to the east of here. Supposedly it's taken two fishermen along with the front half of their boat. Probably a cleverly faked fraud the villagers have made up, for what purpose I don't know yet. Commmercial, probably."

"I see," she replied easily. "BE careful you don't run over any of the local craft when we hit the beach."

For all the surprise she'd shown you might have thought they were here for an evening feast and a casual swim in the little lagoon.

They were on the best of terms with the islanders right from the start. Poplar had rammed the runabout into a beached paopao, spilling them both into the shallow water. Being men of the sea, the villagers thus felt the same sort of sympathy for Poplar that they'd have given any idiot.

When Ha'apu had finally managed to separate himself from his immediate family ... and Poplar and Elaine had dried out a little ... the Matai beckoned them inland.

"The remains of the dugout are in front of my fale, Doctor."

Tafahi was far from being a major island, but it was large enough to support a fair population. A television-FM antenna poked its scarecrow shape above the tallest coconut palm. It jutted from an extra-large fale that served as combination school, church, and town hall.

If the damage to the outrigger had been faked, it was the product of experts. Poplar knelt, ran his hands over the torn edges of the opened hull. Great triangular gashes, each larger than his fist, showed clearly around the shredded edges. Apparently it had been hit ... or the hit had been faked to indicate ... an attack from an angle slightly to port.

"The first tooth was in here ..." Ha'apu knelt beside Poplar to indicate a narrowing hole in the bottom of the craft. "... and the other, here." He pointed, and Poplar saw the other tooth, as large as the one back in his office, still embedded in the side of the outrigger.

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"He lost them, as Niuhi and his cousins often do when they attack hard objects," commented Ha'apu in a helpful tone.

"Yeah," agreed Poplar, absorbed in his examination. "Always carries plenty in reserve, though. I wouldn't think his ancestor would be any exception." He squinted up at the sinking sun. It had begun the spectacular light-show sunset that was an every evening occurrence in the South Seas.

"It's getting late. No point in hurrying to reach that reef tonight. About two hours to get there, you said?"

Ha'apu nodded. "In your boat, yes."

Poplar was a bit surprised. Now was the time that Matai should have begun his excuses, his hedging. He stood, brushed sand from his pants. "Then if you can put us up, I'd just as soon spend the night here. We've been doing enough shipboard sleeping and we'll be doing more."

"I agree!" said Elaine, rather more loudly than was necessary.

The Matai nodded. "Of course there will be a fale for you."

"With *two* mats," Poplar added.

"Why should it be otherwise, Doctor Poplar?" agreed Ha'apu. If the old chief was being sarcastic, he covered it well. But as he walked away, muttering in Samoan, he was shaking his head slowly.

It wasn't the strange surroundings, nor the hard floor beneath the mat of woven tapa cloth that made Poplar's sleep uneasy. He'd enjoyed some of the deepest sleeps of his life in similar situations. And when he was awakened about midnight by a sudden bumping, he drew a startled breath. His dreams had been full of dark arrow-shapes with mouths like black pits. But it was only Elaine. She'd rolled over in her sleep and was resting against his shoulder, breathing softly. Courteously, he didn't push her away, but it made it harder for him to get back to sleep, which displeased him.

When he awoke the next morning he was covered with sweat.

"This may not be the exact spot, but it is very close," breathed Ha'apu. "I know by the trees."

Since the single minuscule "island" harbored barely six or seven small palms, with but two of decent size, Poplar felt confident the old chief had found the spot he wanted.

They'd anchored in the lee of the atoll. It was small enough so that you could see the surf booming against the coral on the far side.

Poplar kept an eye on Ha'apu while he helped Elaine into her scuba gear. Still no sign of an attempt to keep him from diving.

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He thought the hoax was beginning to go a little far.

The tanks they'd brought were the latest models. They'd have an hour on the bottom with plenty of safe time. Elaine checked his regulator, she checked his. They each took up a shark stick, but Poplar gave his to Elaine. He wanted both hands for his camera, and she could handle anything likely to bother them.

There was a diver's platform set just below the waterline at the stern of the *Vatai.* Elaine jumped in with a playful splash. He followed more slowly, handling the expensive camera with care.

Both wore only the upper half of a heat-retaining wetsuit. The ocean flowing around his bare legs told him it was a good thing he had. It wasn't cold, but cooler water flowing from the depths of the oceanic trench obviously found its way up here. The thermocline would rise nearer the surface. That would permit deep-sea dwellers to rise closer to the top. Still, it was comfortable and refreshing after the trip on the boat.

Ha'apu watched them descend, and thought.

The water inside the lagoon would be clear as quartz. Even out here, visibility was excellent in all directions.

The underwater world held as much fascination for him now as it had on his first dive, years ago. Much of the mystery was gone, but the beauty of his refuge was ever-present.

For the first few minutes, as they swam parallel to the reef, he couldn't stop himself from turning to look anxiously in all directions. He gave up that nonsense after five minutes. Nothing more impressive than a fair-sized grouper had trundled clumsily across their path. His shark prod now dangled lazily from his belt.

They stopped often for pictures. Even if this were only a pleasure jaunt, it would be nice to bring back something to justify the expenditure and time.

They returned to the *Vatai* ten minutes early. Poplar was feeling hungry and a little discouraged. The tiny reef had been exceptional in its mediocrity. He'd seen hundreds of identical spots during his trips throughout the Pacific and the Caribbean. And he didn't feel like staying another five or six days.

In sum, he was being took. If Ha'apu's plan was to use the two teeth to get a free estimate of the fishing grounds (probably been in the village for years, he thought), it was working admirably. Poplar was definitely being took.

"Did you see anything?" asked Ha'apu politely as he helped Elaine doff her tanks.

"I got a couple of shots of a

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pretty good-sized moray. Otherwise, Ha'apu, there's more sea life to be found outside the harbor at Pago Pago or Apia."

"He has frightened them all away," commented the chief knowingly. "Perhaps you will have better luck on your next dive."

"Sure," replied Poplar dryly, helping himself to a glass of tea.

By the third day, the attractions of the un-unusual reef had long since paled for Poplar. Even the attraction of swimming through the brilliantly lit water was beginning to seem like work again. Elaine seemed to thrive on it, but, then, there was still something in every crevice to delight her. But he'd seen enough angel fish, brain coral, giant mollusks, trumpet fish, et cetera, et cetera, ad infinitum, to last him another year. And nothing he couldn't see with much less trouble right in the station's backyard.

In fact, except for a peaceful encounter with a poisonous stonefish, the last three days had been about as exciting as a dive in one of Pago Pago's hotel pools.

"Possibly He will come this afternoon," said Ha'apu.

"I know, I know," Poplar replied irritably. It was just about time to tell the old chief off, find out what he wanted, and return home.

In the many-times three dives, they'd sighted exactly three sharks. Two small blues and one pelagic white-tip ... a seven-footer ... that had turned and run for the open sea even before Poplar could set his camera for a decent shot. To him they were just three more fish.

They'd go home tomorrow. True, he'd sort of promised the Matai a week. But the longer he stayed away from the office, the more work would be piled up for his return. Although he'd left the pressures of extreme paperwork back in the states and settled into the more agreeable Samoan mode, old habits died hard. As director, he still had certain responsibilities.

He was drifting along just above the sea bottom about half a mile from the boat. His camera had lined on a gorgeous black and yellow sea worm, flowerlike body fully extended. It was the first really unusual thing he'd seen since they'd arrived. A perfect picture ... his light meter shrank by half.

Damn and hell, that was the last straw! Poplar whirled angrily, expecting to see a playful Elaine floating just above and behind him. He'd warned her at least half a dozen times to stay out of the light when he was taking pictures. She'd seemed to think it was fun.

But something else had swallowed the sun.

For a second Poplar ... training,

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degrees, and experience notwithstanding ... stopped thinking. He went back to his childhood. When he'd lain in bed at night, the covers up around his chin, staring at where his clothes lay draped over the back of his chair. You wouldn't know the kind of terrifying shapes clothes and chair and night can combine to make in a child's mind. Fear squeezed his spine and his heart pumped madly.

Above him, Carcharodon megalodon glided majestically through the clear water, its seemingly unending tail beating hypnotically from side to side, the great pectoral fins cutting the current like hydrofoils.

He turned, saw Elaine drifting alongside. He tugged at her arm. She ignored it. He tugged harder. As though in a dream, she turned to face him. He pointed in the direction of the boat. She nodded, sluggishly following him, half swimming, half towed. A line from Cousteau ran through his mind, and he tried desperately to swim faster.

"Sharks can instinctively sense when a fish or animal is in trouble."

She shook free from him, nodded at his concerned gaze, and began swimming steadily on her own.

For a while the monster seemed not to notice them. It swam slightly ahead, moving effortlessly. A single gigantic stretch of cartilage, tooth, sinew, and muscle. Poplar stared at it and knew that what Ha'apu had said was true. This was more than a fish, more than a shark. You could feel it in yourself and in the water.

Lazily, it banked like a great bird and came at them.

He turned frantically, gestured to Elaine. The shark was between them and the boat. Trying to outswim it would be like trying to outrun lightning. He'd spotted a long crack in the battlements of the reef. Usually such breaks harbored morays, powerful clams, and poisoners like the stonefish. Right now they seemed like the best of friends, harmless as puppies.

There was no subtlety, no attempt to deceive, in their retreat. They swam like hell.

Maybe He was disinterested in such small prey. Whatever the reason, His pursuit remained leisurely. They attained the safety of the rift. Wedged back in the deep, wide crevice, they still had room to swim freely.

He came straight at them. Poplar had to fight down the urge to scrape frantically at the coral behind him. For the moment, he was afraid the monster would try to bite them out, coral and all. It looked big enough to take half the atoll in one gulp.

At the last moment, He swerved

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to His right. There was a brief glimpse of a half-open mouth, a cavern big enough to swallow a truck. It was lined with multiple rows of 18-centimeter-long teeth. A wide black eye passed, pure malignancy floating in a pool of red-hot venom. Then there was a long, endless wall of iron-gray flesh rough as sandpaper ... darker than the skin of a Great White, some part of him noted ... and it was past.

He floated. Elaine prodded him and he could see the terror behind her mask. He wondered if he looked as bad. The great bulk had circled and was beginning a slow patrol of the reef. Not that it was smart enough to consider bottling them up. Clearly it liked the area.

Anyhow, they were stuck.

If the rift had been a chimney, open all the way to the surface, they could have swum upward. Despite the battering of the light surf, they'd have been safer on the reef's jagged top than in the water with Him. But it was closed overhead. To reach the surface, they would have to leave their small fortress.

Minutes passed. They looked at each other without seeing. Each was wholely absorbed in personal thoughts. They'd encountered a terror whose psychological effect was even more overwhelming than its reality. It did not belong to the world of men, this perfect, unmatched killing machine. How puny man seemed, how feeble his invented efforts at destruction.

How frightened he was.

He looked down at his watch. At the rate they were using air, in a few minutes they'd be down to their emergency supply. Elaine prodded, moved her hands in diver's argot. He remained frozen. She grabbed him by the shoulders and shook him. But there was no way he could tell her in sign language of this new problem.

Woodruth "Woody" Poplar was a coward. A physical and moral coward. He knew it, buried it beneath work and joking.

Elaine started tugging at her own tanks. It unfroze him. He grabbed her arms, held them at her side until she finally nodded slowly, calmed.

It took every ounce of courage he possessed to look outside that cranny. He blinked, drifted out further. *He* had disappeared. Poplar glanced in all directions. Nothing.

He beckoned to Elaine. Carefully he made his intentions clear. Megalodon, being as stupid as any modern shark, had doubtlessly drifted off in search of prey that behaved like such and didn't melt into hard, unappetizing coral.

Poplar armed his shark stick ... a terribly futile-seeming gesture. Elaine did likewise. He had to try

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twice with his shaking hands before he got the shell armed. The monster was a good 30 meters long and must weigh more tons than Poplar cared to think about. The shark stick might tickle Him. But it was comforting to hold in the crook of one arm.

He pushed away first and they headed for the *Vatai*. Moving fast, they hugged the reef as tightly as they could. He let her get a little ahead, as arranged. That way they'd make less of a blur against the reef. The smaller shapes would be harder for the shark's poor eyesight to detect against the dark coral.

As they rose gradually towards the surface, leaving the protection of the reef wall, he tried to watch five directions at once. Inside he was oddly calm. What an animal! Nearly a hundred feet of sheer grace and power.

He missed a stroke. Hell, he'd forgotten to take a single picture! Not one lousy shot! All he had by way of proof was the corroborative statement of Elaine ... worth nothing in such august publications as the *Journal of Marine Biology* ... and a couple of teeth that they'd treat as he first had. He would have cried, but it would have ruined his vision.

The curved bottom of the *Vatai* became visible just ahead and above, its anchor cable hardly moving in the calm sea. The platform occasionally broke the surface. He looked regretfully down at his camera.

An unmistakable shape, a slate-gray torpedo, was coming up fast behind them. This time it wasn't a lazy chase. The attack was as sharply defined as death. Sunlight flashed on teeth that could snap through steel plate.

They swam for their lives. Panic filled him, terror made jelly of his muscles. Only adrenalin pushed him through the clean glass water.

They weren't going to make it. *He* wasn't a fish, He was the devil himself, Beelzebub, all the things that go bump in the night, the terrors of childhood and of little boy darkness.

Elaine was falling behind. He slowed.

Goddamnit, it was only a fish.

He turned and waited. Elaine paused only to give him a stricken look in passing and then was gone. Perfectly calm, he was. Relaxed and peaceful in the cool water. Inside, his one major concern was that no one would be able to record this for the *Journal*. Pity. Then there was no sea bottom, no reef, no sunlight. Only He and me, thought Poplar.

He kicked with every bit of energy in his legs, exploding to his right. He had a brief glimpse of an obscene eye as big as a saucer, a

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black gullet as deep as a well. It touched him. Consciousness departed as he jabbed with the shark stick.

He doubted, along with the best Biblical referents, that the sky in heaven was blue. But he wasn't going to argue. There was a constriction, a tightness in his throat, that wasn't caused by fear. Elaine was hugging him and crying. It felt like he'd swallowed a cork.

"For Christ's sake let me get some air!" he finally managed to croak. She backed off.

"Damn you, damn you. You scared the hell out of me, you insensitive, you ...!" She sniffled. Her hair was wet and stringy and she was totally beautiful. "I ran away and left you." The crying broke out again in full force, and she fell onto his chest, sobbing.

"I'm sorry, I apologize for my inconsiderateness. Tell you what, I'll marry you. Will that make up for it?" He rolled over, felt the softness of the mat they'd slipped under him. Someone had removed his tanks and mask.

She pulled away, stared at him in stunned silence. For some reason, this started her crying all over again. They'd removed his fins, too. He wiggled his toes.

Only one set moved.

He sat up slowly and looked down at himself. His right foot ended at the ankle in a swath of bandages and dried blood. His voice was so even it shocked him.

"What happened?" he asked the old Matai, who had been watching him carefully. He was aware the question lacked brilliance, but at the moment he didn't feel very witty.

"He did not take you, Sea-Doctor Poplar. Perhaps so close to the surface, the sun blinded it at the last moment. Perhaps He lost you against the bottom of the boat."

"You don't believe any of that," said Poplar accusingly. He searched for pain but there wasn't any. Someone had made use of the

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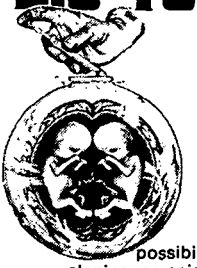
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Vatai's medical kit.

"No, Doctor Poplar, not really. Tangaroa knows why."

Poplar thought of something, started laughing. Elaine looked at him in alarm, but he quickly reassured her.

"No, I'm still sane, I think, 'Laine. It just occurred to me that I can't go stalking around the office like Ahab himself, with only a lousy foot taken. What a cruddy break."

"Don't joke about it," she blubbered, then managed a weak smile. "It will ruin your rhythm at the wedding."

He laughed, too, then slammed a fist against the deck. "We're going back to Tutuila. I'm going to get a ship from the Navy base, somehow, and harpoons. We'll come back here and ...."

"Poplar," began Ha'apu quietly, "no one will believe you. Your Navy people will laugh at you and make jokes."

"Well, then I'll get the funds to hire a bigger ship, someway. One big enough to haul that thing back on. My god, one day I'll see it stuffed and mounted in the Smithsonian!"

"They'll have to build a special wing," Elaine grinned tightly.

"Yeah. And don't you go putting out any fishing lines on the way back, you hear? I don't want to lose you on the trip in."

"How about after we get back?" she replied, staring at him.

He looked at her evenly. "Not then, either. Not ever. Hey, you know something? I'm famished."

"You've been unconscious for five hours," she told him. "I'll fix you something." She rose, moved belowdecks.

"And now you are as I, Doctor for you have gazed upon Him. He has changed you, and you are no longer yourself as before, and He has taken a piece of your soul."

"Listen, Ha'apu, I don't want to offend you by attacking your religion, but that was just a fish, that's all. A monstrous big fish, but no more. I'm the same sea-doctor, and you're the same Matai, and we're just lucky all I lost was a few toes and such. Understand?"

"Of course, Doctor Poplar." Ha'apu turned, went up to the bridge.

Changed indeed! He crawled over to the low railing near the stern, looked down into the waters. Small fish swam down there, magnified and distorted by the sea. He shivered just a little.

He would have married Elaine anyway, of course. And if she'd been threatened by anything, he'd have stepped in to defend her, wouldn't he? Ha'apu fired the engines and the *Vatai* started to move.

Well, wouldn't he?

Maybe He knew.

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PERIPHERALIA

I don't believe this. I really don't. What looks like hundreds of science fiction and fantasy films in the making, and yet another month without anything new and/or major to review. What is so sad as a reviewer without anything to review? A critic with a column to fill and nothing to fill it with?

So again a column of bits and pieces, a pedestal here, a capital there (joke).

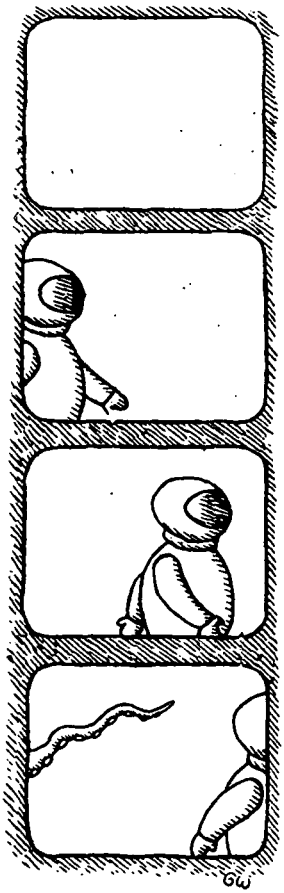
I do have one new thing to talk about, but almost hesitate to mention it for fear that the reader will drop the magazine and run screaming from the room. But let's chance it. *Space 1999* (steady — this won't take long) is off reruns in my area, and today we got a new episode. At least I think it's new. It *looked* new. But somehow the gobbledy gook was familiar.

Our gang, the Alphans, run into an (unexplained) time warp and way out there some where ("We aren't where we supposed to be!" says Barry Morse. "Where the hell is that?" I answered politely), run into an (unexplained) alternate Earth. Because this is an (unexplained) simultaneous time warp, by golly, our Alphans have already settled the place five years ago.

Alan, Koenig, and Helena

BAIRD SEARLES

Films



descend to the surface. The duplicates of the first two have been conveniently killed earlier, but Helena's double is there and to complicate matters, had married the other Koenig before he died. It could at least have been a poignant dramatic situation, but it was solved in time-honored *Space 1999* fashion by having the widow Helena kiss (our) Koenig and then drop dead (unexplained).

Then the two moons run into each other for unexplained reasons and the Alphans are back where they should be (unexplained), where ever the hell that is.

I just wanted to be sure you were kept up on events on Alpha. And to show those poor folks who don't get the show in their area what they're missing.

Now a real bit of peripheralia. I would assume that most readers saw the "special report" some months back on science fiction books and films in *Newsweek*. It was, of course, infuriatingly snide and condescending. Being one of those interviewed for the piece (but not, thank God, quoted), I know that it was well and intelligently researched, so the responsibility for the tone must fall on the writer, Peter Prescott. This is certainly not the place to do a rebuttal, but I did want to add a footnote which might be new to most of you.

Anyone who wrote a negative letter about the article received the following reply, and I quote in full:

TO WHOM IT MAY CONCERN:

YOU MAY BE INTERESTED TO KNOW THAT AS OF 2300 GMT 1/12/76, IN CONSEQUENCE OF CERTAIN IRRESPONSIBLE STATEMENTS PUBLISHED IN THE 12/22/75 ISSUE OF NEWSWEEK, TERRAN MORTAL PETER PRESCOTT HAS BEEN PLACED ON PROBATION BY THE INTERGALACTIC COUNCIL. SHOULD THE SUBJECT PROVE RESISTANT TO STANDARD REHABILITATION AND RECONDITIONING TECHNIQUES, THE COUNCIL WILL SUBMIT A REFERENDUM ON LIQUIDATION AND RECYCLING. IN THAT EVENT, YOUR LETTER WILL BE TALLIED AMONG THE AFFIRMATIVE VOTES.

MEANWHILE, WE HAVE BEEN ASKED TO EXTEND THE COUNCIL'S APOLOGIES AND BEST WISHES.

SINCERELY,

MADELEINE EDMONDSON
FOR THE EDITORS

Now, isn't that a really intelligent answer to an intelligent objection to Newsweek's attitude? Somehow, that made me angrier than the original piece. My only

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comfort is that they must have had a powerful lot of negative mail to go to the trouble of composing and running off an answer in multiple.

Just a random thought. I'm a bit amused at those writers who make a public production of how distasteful they find it to be associated with science fiction and "ghettoized" as s/f writers, but somehow manage to turn up as (paid) guests at *Star Trek* conventions, of all things. I'm certainly not against writers picking up some extra cash *or* the ego boost from adulatory convention-going fans (being as how all they usually see are their *un*adulatory typewriters), but whatever happened to conviction's courage?

Late, late show dept.... Caught *The Incredible Shrinking Man* and *The Power* recently, both films too old to have been covered by this column. I'd like some day to do a full column on TISM; every time I see it, I realize how much it deserves its reputation, and more. Particularly the last five minutes, at the wire screen, with the beautifully written monologue underneath. *The Power,* on only a second seeing, I think is underrated, at least by me. The vagueness of the concept still bothered me, but it is one of those rare s/f films that has a really strong cast.

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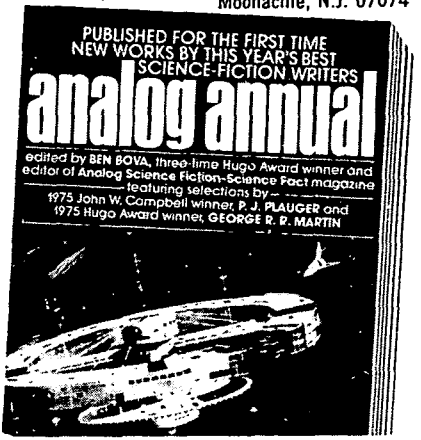
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Things - to - come - dept.... The Pink Floyd reportedly signed to do the music for *Dune.* Now I admire it (them?) immensely, and one of their (its?) concerts at the Fillmore was one of the transcendental experiences of my life, but I see little connection between their work til now, and *Dune* as I remember reading it. I'm afraid it's just another example of a producer trying desperately to be *hip.*

Unlikely - look - alikes - dept.... Anybody besides me notice how much the TV Guide cover for the first week of last Feb. (for S.W.A.T.) looked like an *Analog* cover?

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An involving and thoughtful story about a society that has developed androids that are almost too-human. As a "new minority," the androids would be the first suspected of any wrongdoing, except that they could not kill... or could they?

A Crowd Of Shadows

by C. L. GRANT

Of all the means of relaxation that I have devised for myself over the years, most required nothing more strenuous than driving an automobile, and not one of them had anything remotely to do with murder. Yet there it was, and now here I am — alone, though not always lonely, and wondering, though not always puzzled. I'm neither in jail nor exile, asylum nor hospital. Starburst is where I am and, unless I can straighten a few things out, Starburst is where I'm probably going to stay.

I had long ago come to the conclusion that every so often the world simply had to thumb its nose at me and wink obscenely as if it knew what the hell was making things tick and for spite wasn't about to let me in on the secret. When that happens, I succumb to the lure of Huck Finn's advice and light out for the territory: in my case, that turns out to be Starburst. Where the luncheonette is called The Luncheonette, the hotel is The Hotel, and so on in understated simplicity. Where the buildings, all of them, rise genteely from well-kept lawns on full-acre lots, painted sunrise-new and no two the same shape or shade — a half moon-fashioned community that prides itself on its seclusion and its ability to sponge out the world from transients like me. It's a place that not many can stand for too long, but it's a breather from every law that anyone ever thought of.

At least that's what I thought when I came down last May.

It was a bit warm for the season, but not at all uncomfortable. Wednesday, and I was sitting on the grey sand beach that ribboned the virtually waveless bay they had christened Nova. The sun was pleasantly hot, the water cool, and the barest sign of a breeze drifted down from the misted

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mountains that enclosed the town. I had just dried myself off and was about to roll over onto my stomach to burn a little when a thin and angular boy about fifteen or so dashed in front of me, kicking up crests of sand and inadvertently coating me and my blanket as he pursued some invisible swift quarry. I was going to protest when there was a sudden shout and he stumbled to a halt, turning around immediately, his arms dejectedly limp at his sides. Curious, I followed his gaze past me to a middle-aged couple huddled and bundled under a drab beach umbrella. The woman, hidden by bonnet, dark glasses and a black, long-sleeved sweater, beckoned sharply. The boy waved in return and retraced his steps at a decidedly slower pace. As he passed me, looking neither left nor right, I only just happened to notice the tiny and blurred sequence of digits tattooed on the inside of his left forearm.

I'm sure my mouth must have opened in the classic gesture of surprise, but though I've seen them often enough in the city, for some reason I didn't expect to see an android in Starburst.

I continued to stare rather rudely until the boy reached the couple and flopped face-down on the sand beside them, his lightly tanned skin pale against the grey. The beach was quietly deserted, and the woman's voice carried quite easily. Though her words were indistinct, her tone was not: boy or android, the lad was in trouble. I supposed he was being told to stay close, paying for his minor act of rebellion.

I smiled to myself and lay back with my cupped hands serving as a pillow. Poor kid, I thought, all he wanted was a little fun. And then I had to smile at myself for thinking the boy human. It was a common mistake, though one I usually don't make, and I forgot about it soon enough as I dozed. And probably would never have thought of it again if I hadn't decided to indulge myself in a little fancy dining that evening.

Though my stays are irregular, they have been frequent enough to educate the hotel staff to my unexciting habits, and I had little difficulty in reserving my favorite table: a single affair by the dining room window overlooking the park, overlooking, in point of fact, most of the town since the hotel was the only structure in Starburst taller than two stories, and it was only six. The unadorned walls of the circular room were midnight-green starred with white, a most relaxing, even seductive combination, and its patrons were always suitably subdued. I was just getting into my dessert when I noticed the boy from

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the beach enter with the couple I had assumed were his parents. They huddled with the maitre d' and were escorted to a table adjacent to my own. The boy was exceptionally polite, holding the chair for mother, shaking hands with father before sitting down himself. When he happened to glance my way, I smiled and nodded, but the gesture quickly turned to a frown when I heard someone mutter, "Goddamned humie."

The threesome were apparently ignoring the remark, but I was annoyed enough to scan the neighboring tables. Nothing. I was going to shrug it off to bad manners when suddenly an elderly man and his wife brusquely pushed back their chairs and left without any pretense of politeness. As they threaded between me and the boy, the old man hissed "robie" just loud enough. Perhaps I should have said something in return, or made overtures, gestures, something of an apology to the boy. But I didn't. Not a thing.

Instead, I ordered a large brandy and turned to watch the darkness outside the uncurtained window. And in the reflection of the room, I saw the boy glaring at his empty plate.

In spite of the ground that fact and fiction have covered in exploring the myriad possibilities of societies integrated with the sometimes too-human android, the reality seemed to have come as a surprise to most people. For some it was a pleasant one: androids were androids; pleasant company, tireless workers, expensive but economical. Their uses were legion, and their confusion with actual humans minimal. For others, however, and predictably, androids were androids: abominations, blasphemies, monsters and all the horrid rest of it.

They had become, in fact, the newest minority that nearly everyone could look down upon if they were close-minded enough. Ergo, the tattoos and serial numbers. For people not sensitive enough to detect the subtle differences, the markings served as some sort of self-gratifying justification, though for what I've never been able to figure out exactly. I have a friend in London who has replaced all his servants with androids and has come to love them almost as brothers and sisters. Then, too, there's another friend who speaks of them as he would of his pets.

It's true they haven't brought about the Utopia dreamed of in centuries past; they are strictly regulated in the business community — always clannish, job preference still goes to the human, no matter how much more efficient the simulacrum might be. Still and

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all, I thought as I emptied my glass and rose to leave, there's something to be said for them: at least they have unfailing manners.

So I smiled as graciously as I could as I passed their table. The boy smiled back, the parents beamed. The lad was obviously their surrogate son, and I was slightly saddened and sorry for them.

I spent the rest of the evening closeted in my room, alternately reading and speculating on the reasons for their choice. Death, perhaps, or a runaway: as I said, the androids' uses are legion. It puzzled me, however, why the parents hadn't kept the boy covered on the beach. It would have at least avoided the scene in the dining room. Then I told myself to mind my own stupid business, and for the last time I slept the sleep of the just.

The following morning my door was discreetly knocked upon, and I found myself being introduced to the local detective-in-chief by Ernie Wills, the manager. I invited them in and sat myself on the edge of the still-unmade bed. "So. What can I do for you, Mr. Harrington?"

The policeman was a portly, pale-faced man with a hawk nose and unpleasantly dark eyes. Somehow he managed to chew tobacco throughout the entire interview without once looking for a place to spit. I liked the man immediately.

"Did you know the Carruthers family very well?" His voice matched his size, and I was hard put not to wince.

I looked blank. "Carruthers? I don't know them at all. Who are they?"

Harrington just managed a frown. "The couple sitting next to you last night at dinner. The boy. I was under the impression that you knew them."

"Not hardly," I said. "I saw them once on the beach yesterday afternoon, and again at dinner." I spread my hands. "That's all."

"Some of the other guests said you were rather friendly to them."

By that time I was completely puzzled and looked to Ernie for some assistance, but he only shrugged and tipped his head in Harrington's direction. It's his show, the gesture said. And for the first time, I noticed how harassed he seemed.

"In a detective novel," I said as lightly as I could, "the hero usually says, 'You have me at a disadvantage.' I'm sorry, Mr. Harrington, but I haven't the faintest idea what in God's name you're talking about."

Harrington grinned. His teeth were stained. "Touche. And I apologize, okay? I didn't mean to be so damned mysterious, but

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sometimes I like to play the role. I read those books too." He settled himself more deeply into the only armchair in the room and reached into a coat pocket for a handkerchief which he used to wipe his hands. "You see, there's been a murder in the hotel."

I looked at him patiently, but he didn't say anything else, apparently waiting for my reaction. I almost said, so what? but I didn't. "Am I supposed to guess who was murdered, or who did it? My God, it wasn't one of the Carruthers', was it?"

Harrington shook his head.

Ernie swallowed hard.

"Well, surely you don't suspect one of them?"

"Wish I knew," Harrington said. "An old man was found outside his door on the third floor about three o'clock this morning. His throat was, well, not exactly torn ... more like yanked out. Like somebody just grabbed hold and pulled."

That I understood, and the unbidden image that flashed into my mind was enough to swear me off breakfast, and probably lunch. I shuddered.

"Some people," the detective continued, "said they heard this old guy call the boy 'robie.' Did you hear it?"

"Yes," I answered without thinking. "And I heard someone else, I don't know who, call him a 'humie.' There were other remarks, I guess, but I didn't hear them all. That kind of talk isn't usual, you know. The Carruthers may have been offended, but I hardly think they'd have murdered for it. I smiled as nicely as I could because I felt sorry for them, and the boy."

Harrington kept wiping his hands; then, with a flourish, deposited the cloth back into his pocket and stood. "Okay," he said brusquely. "Thanks for the information."

As he turned to leave, I couldn't help asking if he really believed the boy or his parents had done it. "After all," I said, "the boy is an android. He can't kill anyone."

Harrington stopped with his hand on the door knob. He actually looked sorry for me. "Sir, either you read too much, or you watch too much TV. Andy or not, if ordered, that kid could kill as easily as I could blink."

And then he left, with silent Ernie trailing apologetically behind. Slowly I walked to the window and gazed out toward the bay. The sun was nearing noon, and the glare off the water partially blinded me to the arms of the coast that came within a hundred meters of turning Nova into a lake. Below was the single block of businesses that squatted between me and the beach. Leaning forward, I spotted a

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a milling group of people and a squad car. I watched, trying to identify some of them, until Harrington strolled from the building and drove away. The crowd, small as it was, disturbed me. Starburst wasn't supposed to deal in murder.

"Christ," I said. "And I wanted to punch that old guy in the face."

I shook myself and dressed quickly. At least Harrington didn't tell me not to leave town. Not that I would have. I still had four days of vacation left, and though I was sorry for the old nameless man, and sorrier for the shroud the crime must have placed on the Carruthers, I still intended to soak up as much sun as possible.

And so I did until a shadow blocked the heat, and I looked up from my blanket into the face of the boy: the face turned black by the sun behind him. Specter. Swaying. I imagine I appeared startled because he said, "Hey, I'm sorry, mister. Uh, can I talk with you a minute?"

"Why, sure, why not?" I shifted to one side and sat up. Today the boy was fully dressed in sweat shirt, jeans and sockless sneakers. His dark hair was uncombed. He squatted next to me and began to draw nothings in the sand. Since I'm single, I guess I haven't developed whatever special rapport a man can have with a younger version of himself; and when that youthful image isn't even human, well, I just sat there, waiting for someone to say something.

"You were nice to me and my people last night," he said finally, his voice just this side of quavering. "I think I should thank you."

My mind was still not functioning properly. Part of me kept up a warning that this kid was suspected of murder, and my throat tightened. The other parts kept bumping into each other searching for something to say that sounded reasonably intelligent.

"They, uh, treated you rather unkindly, son."

He shrugged and wiped the sand from his doodling finger. "We get used to it. It happens all the time, though I guess that's not really true. Not all the time, anyway. Maybe it just seems bad here because it's so small. I'm ... we're not used to small places."

He began digging into the sand, tossing the fill up to be caught and scattered by a sharp, suddenly cool breeze.

"People can be cruel at times," I said unoriginally. "You shouldn't let it bother you and your folks. Small people, you know, and small minds."

The boy stared at me from the corner of his eyes, his face still in shadow. "Aren't you afraid of me?"

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"Why? Should I be?"

He shrugged again and worried the hole with the heel of his hand. "I think that detective thinks I killed that old man. He talked with us nearly two hours this morning. He said he was satisfied. I don't think so."

I shifted around to face him, but he continued to avert his face. I couldn't remember seeing such a shy boy before, though I supposed that the shock of the crime wasn't the easiest thing in the world to accept with nonchalance, especially when he was on the receiving end of the suspicion. I made a show of searching the beach, stretching my neck and gawking like a first-time tourist. "I don't see your, uh, parents. Are they as unconcerned as you?"

"My people are inside. They don't want anyone staring at them."

My people. That was the second time he'd used that wording, and I wondered. In the silence I found myself trying to place his accent, thinking it was perhaps a custom of wherever he came from, but there was nothing to it. Curiously so. He could have lived anywhere. On impulse I asked if he and his mother and father would care to join me for dinner. He shook his head.

"Thank you, but no. We'll eat in our room until something happens to change their minds. The doorman almost slammed the door in my face."

That figures, I thought as the boy struggled to his feet. He looked down at me and said, "Thank you again," and was gone as abruptly as he had come. It was then that I noticed the few sunbathers staring at me, their hostility radiating clearly. I grinned back at them and lay face down, hoping they hadn't seen the grin twist to grimace.

As I lay there, I considered: unlike members of most minorities, androids had no recourse to courts, education or native human talent to drag them out of their social ghetto. They were as marked as if their skin had been black or brown, only worse because whatever rights they had stopped at the factory entrance. And I wasn't at all pleased to have to admit to myself that even I couldn't see handing them the same rights and privileges as I had. I was beginning to wonder just how far above the crowd I really was for all my ideas. I thought of the people who'd glared at me: you'd better stop casting stones, I told myself. Don't feel sorry for the boy, feel sorry for the parents.

And then I dozed off, which, for my skin, is tantamount to stretching out on a frying pan. When I awoke again, my back felt as if it had been dragged over hot

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coals. And in feeling the burning pain, I surprised myself at the foul language I could conjure. I tried to put on my shirt, gave it up as the second worst idea I'd had that day, next to sunbathing, and gathered my things together. I walked across the sand and between the buildings that had their backs to the bay. When I reached the street, I stopped dead at the curb. There was the squad car again and an ambulance. A crowd getting noisy. And the flashing red lights. I spotted Detective Harrington staring at me, and I waved and crossed. He met me by the police car.

"Heart attack?" I asked, indicating the ambulance.

"You could say that," he said dryly. "A man has had his head bashed in."

I found it difficult to believe. It was as if someone had drilled a pipeline directly from the outside world into Starburst and was pumping in that which we were all here to get away from. Some wonder the people milling around us were in such a foul mood. I tried a sympathetic smile on Harrington, received no reaction and turned to go. I hadn't taken a single step when he placed a gently detaining hand on my arm.

"Somebody said you were talking to the boy."

"Somebody?" Suddenly I was very mad. "Just who the hell are these somebodies that seem to know everything, every goddamned thing that I do or say?"

"Concerned citizens," he said with a slight trace of bitterness, as if he'd had his fill of concerned citizens. "Were you?"

"Yes, as a matter of fact, I was." I looked at my watch. "About an hour ago. On the beach."

"For how long?"

I tried to ignore the people trying very hard not to appear as if they were eavesdropping. "Hell, I don't know. Fifteen minutes, maybe twenty, twenty-five."

I looked at Harrington closely, trying to snare a clue as to what he was thinking. I did know that, for some reason, he still felt the boy had to be involved with these two appalling crimes. Yet, if the boy had committed them, he would have had to have been ordered to do so. And that meant the Carruthers. Somehow I couldn't see those two becoming entangled in something quite so lurid. I was about to say as much when a flower-shirted man shoved through the crowd and confronted us. The stereotypes come crawling out of the woodwork, I thought and immediately wished there was something I could do for the big detective.

"If you're the police," the man demanded in a voice as shrill as a

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woman's, "why aren't you doing something about this?"

"'Sir, I am doing what I can."

"I don't like it."

Harrington shrugged. The man was evidently a tourist, and the detective obviously felt as if he had more important people, like the natives, to be answerable to. "I'm sorry you feel that way, sir, but unless we can —"

"I want some protection!" the man said loudly and was instantly echoed by several of the crowd who had paused to listen.

Harrington smiled wryly. "Now how do you expect me to manage that with the force I have here? Did you know the man?"

"Of course not. I only arrived yesterday."

"Then what exactly are you worried about?"

"Well, that killer's obviously a maniac. He could kill anyone next."

The detective stared at him, then glanced at me. "No," he said quietly. "I don't think so."

"Well, what about that andy." someone else demanded. "Why the hell don't you lock it up? It's dangerous."

With that bit of melodramatic tripe, Harrington's patience finally reached its end. "Lady," he said with exaggerated calm, "if you can give me the proof, I'll snap that kid's tape faster than you can blink. But he belongs to someone, and there isn't anything I can do without proof. So why don't you, and all the rest of you, why don't you just go about your business and leave us alone. You want me to catch this man, boy, woman, whatever, I can't stand around here answering your hysterical, stupid questions."

For a moment I was tempted to applaud. In fact, one or two people did. But I just stood aside while the crowd dispersed, far more rapidly than I thought it would. Most of the people disappeared into the hotel, muttering loudly. The rest scattered and were gone within a minute's time. When it was quiet, Harrington signaled the ambulance driver, then slid into his own car. He rolled down the window, chewing his tobacco slowly. He spat. "Middle-class backbone of the race," he said to me and drove off. The ambulance followed and I was alone on the sidewalk. I don't remember how long I stood there, but staring passers-by reminded me that I was dressed only in my bathing trunks and still carrying my beach paraphernalia. Embarrassed, I darted inside and rushed up to my room. In the bathroom was a first-aid kit, and after many painful contortions, I managed to empty the can of aerosol sunburn medication onto my back.

I felt flushed.

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Feverish, nearly groggy as if in a nightmare.

Despite the air conditioning, the room felt warm, but I didn't want to go out again. Not for a while. A long while. In spite of some of the other hotel guests' fears, I realized I hadn't once felt as though I were in the slightest danger, and when that fact sunk in, I was horrified. I didn't believe I was in danger because I knew I had never been anything more than polite to the Carruthers and their son. *Guilty.* Jesus Christ, I thought they were guilty.

You son of a bitch, I told myself. You're as bad as the rest of them. Would a grown man murder for an insult as common as the ones Carruthers must have been getting for as long as he'd had the android? To strike back so drastically was too immature for the owner of a simulacrum — he would be too vulnerable.

Hell! It was not a pleasant day. It had not been a pleasant vacation. I hesitated and finally tossed my things into my bag. I decided to wait until after dinner to leave. Until then, I lay on my bed, and it wasn't long before I fell asleep.

I dreamt, but I'd just as soon not remember what it was I saw in those dreams.

In Starburst, the dark is not quite the same as in the rest of the world. Because of the mist on the hills, the slate and stone roofs, the moonlight and starlight glinted off more than just water, and the result was a peculiar shimmer that slightly distorted one's vision. When I awoke to that unnatural light, I had a splitting headache. Groping around on the nightstand, I found my watch and saw it was close to ten o'clock. Hurriedly I swung off the bed, thinking that if I were as good a patron as the hotel led me to believe, I might be able to squeeze in a meal before the kitchen closed for the night. The clothes I was going to wear home were laid out on a chair, and without turning on the lamp, I dressed, standing in front of the window. The moon was hazed, and what stars there were challenged my schoolboy knowledge of constellations. I was staring out over the building at the bay when I caught movement on the beach. All I could see was a group of shadows. Struggling.

I leaned forward, straining to make out details, curious as to who would be playing games this time of night, since Starburst was definitely not noted for its evening festivities. As I clipped on my tie, the shadows merged into a single black patch, then separated and merged again. But not fast enough to prevent me from spotting one of them lying on the ground. The figure didn't move, and for no

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reason other than an unpleasant hunch, I dashed from the room and, not wanting to wait for the elevators, ran down the fire stairs and outside.

Once on the sidewalk, I hesitated for the first time, realizing I could very likely be making a complete ass of myself. There were no sounds but the evening wind in the park trees. As I crossed the street, my heels sounded like nails driven into wood and I self-consciously lightened my step. I became more cautious, though feeling no less silly, when I entered an alley and could see the beach and bay beyond. By the time I reached the far end, I was almost on hands and knees, and now I could hear: grunting, and the dull slap of body blows, struggling feet scraping against the sand. It didn't take a mastermind to figure out what was happening, and, for all my professed cowardice, I burst from the alley shouting, just a split second before I heard someone gasp, "Oh my God, look at that!"

The group of people were close to fifty meters from me, and when they heard my racket, they scattered, leaving me behind, motionless on the beach.

I vacillated, then ran to the fallen body. Closer, and in the dim moonlight I could see it was the boy.

Standing next to him, I could see he was bleeding.

And kneeling, I knew he was dead.

A boy.

I panted, my breath shuddering.

A boy.

I'm not sure exactly what I felt at the moment. Shock, anger, sorrow. Anger, I suppose, the greatest of these. Not so much for the shadows who had killed him, but for the ruse he had perpetrated on us all. Callously I stared at his bloodied face and thought: you tricked me. Damnit, you tricked me.

Slowly I rose. I brushed the sand from my knees and walked swiftly back to the hotel. Just before I stepped into the lobby, I saw the whirling red light on a squad car, and I was glad I wasn't the one who had made the call.

The fourth floor, like the lobby and elevator, was deserted. I walked to the end of the hall and knocked on the Carruthers' door. When there was no answer, I knocked again and turned the knob. The door opened to a darkened room, and I stepped in.

The man and woman were sitting motionless in identical chairs facing the room's only window.

"Mr. Carruthers?" I didn't expect an answer, and I received none.

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I moved closer and gathered what nerve I had left to reach down and touch the woman's cheek, poised to snap my hand back should she flinch. The skin was cold. She didn't move, didn't react. She and the man stared directly into the moonlight without blinking. Carefully I rolled up her sleeve, and though the light was dim, I found the markings easily. There was no need to do the same to the man.

I was still standing there when the lights flicked on and Harrington lumbered in, followed by a covey of police photographers and fingerprint men. The detective waited until my eyes adjusted to the bright light, then pulled me to one side, away from the strangely silent activities. It was as if they were investigating a morgue. Harrington watched for a while, pulling out his handkerchief and again wiping his hands. I never did learn how he'd picked up that habit, but at that particular time it seemed more than apropos.

"You, uh, saw the boy, I take it?" he said.

I nodded dumbly.

"Didn't happen to see who did it, I suppose."

"Only some shadows, Harrington. They were gone before I got close enough to identify them. Any of them."

One of the men coughed and immediately apologized.

"Would it be too much to ask who called you?" I said.

"What call? I was coming over here to question the kid." He pulled a slip of wrinkled paper from his jacket pocket and squinted at some writing. "I checked on the, uh, parents, just

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for the hell of it, just to keep those people off my back. Seems he was fairly well off — the kid, I mean. He is, was eighteen and from the time he was six was shunted back and forth between aunts and uncles like a busted ping-pong ball." He shook his head and pointed a stubby finger at some line on the paper. "When he reached majority and claimed his money, he bought himself some guardians. Parents, I guess they were supposed to be. According to some relative of his, this was the first place he brought them. Trial run." He shoved the paper back into his pocket as though it were filth. "I'm surprised nobody noticed."

I had nothing to say. And Harrington didn't stop me when I left.

My people.

He had deliberately exposed the false identification on his arm and had never once looked me straight in the eye. It was all there, but who would have thought to look for it? He had been challenging me and everyone else, using the simulacra to strike back at the world. Maybe he wanted to be exposed; maybe he was looking for someone as real as I to stop the charade and give him a flesh-and-blood hand to shake. Maybe — but when I think of going back to a city filled with androids and angry people, I get afraid.

And worse ... my own so-called liberal, humanitarian, live-and-let-live armor had been stripped away, and I don't like what I see. As much as I feel sorry for the boy, I hate him for what he's done to me.

That crowd of shadows could have easily held one more.

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Man plus is cyborg astronaut Roger Torraway, and here, in the stunning conclusion to Fred Pohl's new novel, Torraway is launched on a mission to Mars.

Man Plus

by FREDERIK POHL

Synopsis of Parts I and II: From every indication we could find the world was getting ready to exterminate itself, and so it was time to move on. New People's Asia was squared off against the Australians in the Pacific, and nearer to home the cities of the United States were in a semi-permanent state of armed riot. The President of the United States studied our projections and ordered the creation of a Cyborg astronaut to become the first Martian: the first human being to be so structured that he could live comfortably on the surface of Mars. Willy Hartnett was chosen for the task, surgically deprived of all his unnecessary parts, mechanically supplied with new ones and trained to the use of his new body. Whereupon he died, unable to handle the new inputs.

The next man in line was Roger Torraway.

Roger was an astronaut of wide experience; he was also the husband of Dorrie Torraway, which caused certain complications, because she was widely experienced too. Among her inputs was one of the specialists helping to put the new Roger Torraway together, Alexander Bradley. What Brad did was to supervise the mediation apparatus inside the Cyborg system which interpreted the new sensory stimuli in ways that the human brain of the Cyborg could handle. Sensory stimuli were Brad's hobby, as well as his profession. Father Don Kayman, the Jesuit priest who was also the Project's chief specialist on Mars, also found himself doubly involved in what was going on at the Project headquarters in Tonka, Oklahoma. As a scientist, he was deeply involved in the task of making Roger's new sensorium and musculature work. As a priest and a friend, he was concerned about Roger Torraway as a human being. Don Kayman feared the relationship between Dorrie Torraway and Brad as a threat to the Project.

And so did we. After all, we had the survival of the race to consider.

Nevertheless the Project went on, and Roger began to learn the uses of the leg muscles that could let him run at a hundred kilometers an hour, the eyes that saw into ultraviolet and infrared, the new replacements for heart and lungs that made him independent of breathing and of warmth. Because there was so much to

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handle, he had been given a sort of auxiliary brain, a backpack computer that received all the inputs of his senses and organized them into images and sensations that he could perceive as gestalts. Sometimes the images were terrifying, sometimes beautiful.

But Roger himself was far from beautiful. His new vision came through grotesque insect eyes that covered most of the top part of his face. Solar receptor panels, gauzy black membranes, were designed to flow from his shoulders, looking like the wings of a demon. He did not want his wife to see him in this condition ... and yet he wanted to see his wife.

His emotional condition was threatening the success of the whole endeavor, and so we took steps. President Deshatine made a special trip to Tonka to see what was going wrong. As a consequence Dorrie's affair with Brad was put on permanent hold, for the duration, and Roger was supplied with a new friend. Her service record said she was Sulie Carpenter, a major with a first-class record as astronaut-trainee, medical doctor-psychiatrist and research scientist in the space program. To Roger she was introduced only as a new nurse. But what he saw was not just a nurse, it was a woman who looked very much like his wife Dorrie. There was no accident about it: hair dye, contact lenses and an intensive course in the mannerisms and speech patterns of Dorrie Torraway were what made the resemblance. Her job was to make Roger happy, or as happy as a human being can be when most of his humanity, including his sexual equipment, have been removed as surplus to requirements.

Nevertheless she was only partly successful.

Roger lay awake one night, thinking about Dorrie, and decided to do something about it. He short-circuited the Project's electrical system, and in the blackout slipped out and ran, at the full speed of his Cyborg legs, into Tonka to see his wife. With his infrared vision and instant responses he had no difficulty in getting past guards and police, and entering his home. He saw Dorrie, frightening her with his grotesque appearance. They talked, and he realized that to her he was now a stranger; and when the people from the Project came to get him, he returned without objection.

We calculated the probabilities and determined that there was too much at stake to risk another adventure of Roger's. So the time-sense of his new body was artifically slowed. He was put into standby mode, so that the remaining days before the launch seemed to him only a few minutes ....

And the Mars Project was ready to launch.

Chapter Thirteen

When We Pass the Point of No Return

The long Hohmann-orbit trip to Mars takes seven months. All previous astronauts, cosmonauts and sinonauts had found them very wearing months indeed. Each day

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had 86,400 seconds to fill, and there was very little to fill them with.

Roger was different from all the others in two ways. First, he was the most precious passenger any spaceship had yet carried. In and around his body were the fruits of seven billion Man Plus dollars. To the maximum extent possible, he had to be spared.

The other way was that, uniquely, he could be spared.

His body clocks had been disconnected. His perception of time was what the computer told him it should be.

They slowed him down gradually, at first. People began to seem to move a little more briskly. Mealtime came sooner than he was ready for it. Voices grew shriller.

When that phased in nicely, they increased the retardation in his systems. Voices passed into high-pitched gibberish and then out of his perception entirely. He hardly saw people at all, except as flickers of motion. They sealed off his room from the day — it was not to keep him from escaping, it was to protect him from the quick transition from day to night. Platters of room-temperature, picnic-style food appeared before him. When he had begun to push them away to signal he was done, or didn't want them, they whisked out of sight.

Roger knew what was being done to him. He didn't mind. He accepted Sulie's promise that it was good, and needful, and all right. He thought he was going to miss Sulie and looked for a way to tell her so. There was a way, but it all went so rapidly; messages were chalked as if by magic on a board in front of him. When he responded, he found his answers snatched away and erased before he was quite sure he was through:

HOW ARE YOU FEELING?

Pick up the chalk, write one word.

FINE

and then the board is gone, brought back with another message —

WE'RE TAKING YOU TO MERRITT ISLAND

And his reply

I'M READY

snatched away before he could add the rest, which he scrawled rapidly on his bedside table —

GIVE MY LOVE TO DORRIE

He had intended to add "and Sulie," but there was no time; suddenly the table was gone. He was gone from the room. There was a sudden dizzying lurch of movement. He caught a quick glimpse of the ambulance entrance to the project and a quick phantom glimpse of a nurse — was it Sulie? — with her back to him adjusting her panty hose. His whole bed

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seemed to leap into the air, into a brutal blaze of winter sunlight, then into — what? A car? Before he could even question, it sprang into the air, and he realized that it was a helicopter and then that he was very close to being sick. He felt his gorge rising in his throat.

The telemetry faithfully reported, and the controls were adequate to the problem. He still felt he would like to vomit, feeling himself thrown around as though in the most violent sort of cross-chop sea; but he did not.

Then they stopped.

Out of the helicopter.

Bright sunlight again.

Into something else — which he recognized, after it had begun to move, as the interior of a CB-5, fitted up as a hospital ship. Safety webbing spun magically around him.

It was not comfortable — there was still the hammering, and the twisting vertigo, though not as unbearable — but it did not last long. A minute or two, it seemed to Roger. Then pressure smote his ears, and they were taking him out of the plane, into blinding heat and light — Florida, of course, he realized tardily; but by then he was in an ambulance, then out of it ....

Then, for a time that seemed to Roger ten or fifteen minutes and was actually the better part of a day, nothing happened except that he was in a bed, and was fed, and his wastes were removed by catheter, and then a note appeared before him:

GOOD LUCK, ROGER, WE'RE ON OUR WAY

and then a steam hammer smote him from underneath, and he lost consciousness. It is all very well, he thought, to spare me the inconvenience of boredom, but you may be killing me to do it. But before he could think of a way to communicate this to anyone, he was out.

Time passed. A time of dreams.

He realized groggily that they had been keeping him sedated, not only slowed down but asleep; and in realizing that he was awake.

There was no feeling of pressure. In fact, he was floating. Only a spiderweb of retaining straps kept him in place.

He was in space.

A voice spoke next to his ear.

"Good morning, Roger. This is a tape recording."

He turned his head and found a tiny speaker grille next to his ear.

"We've slowed it down so that you can understand it. If you want to speak to us, you just tape what you want to say, in a minute. Then we'll speed it up so *we* can understand it. Ain't science grand?

"Anyway, we're into day thirty-one as I tape this. In case you don't remember me any more, I'm

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Don Kayman. You had a little trouble. Your muscle system fought against the takeoff acceleration, and you pulled some ligaments. We had to do a little surgery. You're mending nicely. Brad rebuilt part of the cybernetics, and you probably can handle the deltas when we land in good shape. Let's see. There's nothing else important to say, and probably you have some questions, but before you take your turn, there's a message for you."

And the tape whispered scratchily for a moment, and then Dorrie's voice came on, bent and attenuated. Over a background hiss of static she said:

"Hi, honey. Everything's fine back home, and I'm keeping the home fires burning for you. I think of you. Take care of yourself."

And then Kayman's voice again:

"Now here's what you do. First off, if there's anything important — if you hurt, or anything like that — tell us that right away. There's a lot of real-time loss in this; so say the important stuff first, and when you're through just hold up your hand while we change tapes, and then you can go on to the chitchat. Now go."

And the tape stopped, and a small red light that had said "Play" next to the speaker grille went out, and a green one came on to say "Record."

He picked up the microphone and was getting ready to say that no, there wasn't any particular problem, when he happened to look down and notice that his right leg was missing.

We were, of course, monitoring every moment in the spacecraft.

The communication link had stretched pretty thin even after the first month. The geometry was troublesome. While the spacecraft was climbing out toward Mar's orbit, Mars was moving. So was the Earth, and a good deal faster. It would go around the sun almost twice before Mars completed a single one of its orbits. The telemetry from the spacecraft now took something like three minutes to reach Goldstone. We were passive listeners. It would get worse. Any command from Earth would come an hour late by the time the spacecraft was circling Mars, round-trip time at the speed of light. We had surrendered instant control; the ship and its passengers were effectively on their own.

Later still, Earth and Mars would be on opposite sides of the sun. The weak signals from the spacecraft would be so compromised by solar interference that we would not even receive reliably. But by then the 3070 would be in orbit, and shortly thereafter the MHD

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generator would join it. Then there would be plenty of power for everything. It was all planned out, where each would go, how they would interlink with each other, with the orbiting ship, with the ground station and with Roger, wherever he might roam.

We launched the 3070, powered down into stand-by mode. It was a robot run. The ionization risk turned out, on analysis, to be unacceptable in a spacecraft of normal configuration. So the Cape engineers stripped away all the life support, all the telemetry, the demolition system and half of the maneuver capability. The weight went into shielding. Once it was launched it was silent and lifeless and would stay that way for seven months. Then General Hesburgh would capture control and play both ends of the docking maneuver. It would be difficult, but that was what he was paid for.

We launched the MHD generator a month later, with a crew of two volunteers and a maximum of publicity. Everyone was interested now. And no one objected, not even the NPA. They disdained the first launch. They acknowledged tracking the launch of the 3070 and offered their data to the NASA net. When the generator went up, their ambassador sent a polite note of congratulation.

Something was happening.

It was not all psychological. New York City had two straight weeks without rioting, and garbage was collected from some of the main streets. Winter rains put out the last of the great fires in the northwest, and the governors of Washington, Oregon, Idaho and California sent out a joint call for volunteers. More than a hundred thousand young people signed up to replant the mountain slopes.

The President of the United States was the last to notice the change; he was too busy with the internal disasters of a nation that had overbred and overspent itself into tragedy. But the time came when he realized there had been a change, not only within the United States but worldwide, not only in a change in mood but in a change in tactics. The Asians withdrew their nuclear subs to the waters of the Western Pacific and the Indian Ocean, and when Dash got confirmation of that, he picked up the phone and called Vern Scanyon.

"I think —" He paused and reached out to touch the smooth wood of his desk top. "I think it's working. Pat your staff on the back for me. Now, what else do you need?"

But there was nothing.

We had gone as far as we could go, and the rest was up to the expedition itself.

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Chapter Fourteen

Missionary to Mars

Not more than six times a day Don Kayman allowed himself to pray. He prayed for various things — sometimes for relief from the sound of Titus Hesburgh sucking his teeth, sometimes to be spared the smell of stale farts that smogged the interior of the spacecraft — but there were always three petitions in each prayer: the success of the mission, the fulfillment of God's plan for Man and, most particularly, the health and well being of his friend, Roger Torraway.

Roger had the distinction of a private stateroom of his own. It was not much of a room, and the privacy was only an elastic curtain, gossamer thin and not wholly opaque; but it was all his. The other three shared the crew cabin. Sometimes Roger shared it, too, or at least parts of Roger did. He was all over the place, Roger was.

Kayman looked in on him often. The trip was a long, dull time for him. His own specialty, which was of course not operative until they actually set foot on the surface of Mars, needed no touch-up or practice. Areology was a static science and would remain so until he himself, hopefully, added something to it after landing. So he had let Titus Hensburgh teach him the instrument board and, a little later, let Brad teach him something about field-stripping a Cyborg. The grotesque form that slowly writhed and postured in its foam cocoon was no longer unfamiliar. Kayman knew every inch of it, inside and out. As the weeks wore on he lost the abhorrence that had deterred him from wrenching an eye from its socket or opening a panel into a plastic-lined gut.

It was not all he had to do. He had his music tapes to listen to, an occasional microfiche to read, games to play. At chess he and Titus Hesburgh were pretty evenly matched. They played interminable tournaments, best 38 games out of 75, and used their personal comm allotments to have chess texts radioed up to them from Earth. It would have been relaxing for Father Kayman to pray more, but after the first week it had occurred to him that even prayer could be carried to excess. He rationed it out, on awakening, before meals, in midevening and before retiring. That was all. That was not, of course, to count the quick lift from a Paternoster or from telling His Holiness's rosary. And then he would go back to the endless refurbishing of Roger. He had always had a queasy stomach, but oviously Roger was oblivious to these invasions of his person and took no harm from them. Kayman

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gradually began to appreciate the inner beauty of Roger's anatomy, both that part which was Man's handiwork and that part which was God's; he gave thanks for both.

He could not quite give thanks for what God and man had done to the interior of Roger's mind. It troubled him that seven months was being stolen out of his friend's life. It drew forth compassion that Roger's love went to a woman who held it cheap.

But, everything considered, Kayman was happy.

He had never been on a Mars mission before, but this was where he belonged. Twice he had been in space: a shuttle run to an orbiter, when he was still a graduate student seeking his doctorate in planetology; then a ninety-day tour in Space Station Betty. Both were acknowledged to be mere practice for the mission that would complete his study of Mars.

All that he knew of Mars he had learned telescopically, or deductively, or from the observations of others. He knew a lot of that. He had played and replayed the synoptic tapes of all the Orbiters and Mariners and Surveyors. He had analyzed returned bits of soil and rock. He had interviewed the Americans, French and British who had landed in their Mars expeditions, and most of the Russians, Japanese and Chinese.

He knew all about Mars. He always had.

As a child he had grown up on the Edgar Rice Burroughs Mars, the colorful Barsoom of the ocher dead sea bottoms and hurtling tiny moons. As he grew older he distinguished fact from fiction. There was no reality in the four-armed green warriors and the red-skinned, egg-laying beautiful Martian princesses, to the extent that science was in touch with "reality." But he knew that scientists' estimates of "reality" changed from year to year. Burroughs had not invented Barsoom out of airy imaginings. He had taken it almost verbatim from the most authoritative scientific "reality" of his day. It was Percival Lowell's Mars, not Burroughs's, that was finally denied by bigger telescopes and by space probes. In the "reality" of scientific opinion, life on Mars had been born and died a dozen times.

But even that had never been settled, really. It depended on a philosophical question. What was "life"? Did it have to mean a creature that resembled an ape or an oak tree? Did it necessarily mean a creature which dissolved its nutrients in a water-based biology, took part in an oxidation-reduction cycle of energy transfer, reproduced itself and grew thereby from the environment? Don Kayman did not

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think so. He considered it arrogance to limit "life" so parochially, and he was humble in the face of his Creator's all-potentiating majesty.

In any case, the case for life genetically related to Earth life was still open. Well, ajar. True, no ape or oak tree had been found. Not even a lichen. Not even a growing cell. Not even (he had to confess with rue, because Dejah Thoris died hard in his bosom) such prerequisites as free oxygen or water.

But Kayman did not accept that the fact that no one had slipped on a bed of Martian moss meant there was none anywhere on Mars to slip on. Less than a hundred human beings had ever set foot on Mars. The combined area of their explorations was only a matter of a few hundred square miles. On Mars! Where there were no oceans, and so the land surface to explore was greater than the Earth's! It was almost like pretending to know the Earth by making four quick trips to the Sahara, the top of the Himalayas, Antarctica and the Greenland icecap ....

Well, no, Kayman conceded to himself. That wasn't strictly fair. There had been innumerable fly-bys and orbiters, surveyors that landed and snatched up samples of soil.

Nevertheless the principle was sound. There was too much of Mars. No one could pretend that it did not possess secrets still. Water might yet be found. Some of the rifts looked hopeful. Some of the valleys had shapes that could hardly be understood, unless you assumed they were carved out by streams. Even if they were dry, there still might be water, vast oceans of water even, locked under the surface. Oxygen one knew was present. Not a great deal on the average, but averages were not important. Locally there could be plenty. And so there might be ....

Life.

Kayman sighed. It was one of his great regrets that he had not been able to deflect the decision on a landing place to one of his personal favorites for suspicion of life, the Solis Lacus area. The decision had gone against him. It had been taken on very high authority — in fact, it was Dash himself who said, "I don't give a leaping shit where something may be alive now. I want to put this bird down where our boy can expect to stay alive the easiest."

So they had picked a spot nearer the equator and in the northern hemisphere; the main features were called Isidius Regio and Nepenthes, and at their interface was a gentle crater that Don Kayman had privately christened *Home*.

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Also privately, he regretted the loss of Solis Lacus and its seasonally changing shape (growing plants? Probably not — but one could hope!), the bright W-shaped cloud around the canals of Ulysses and Fortunae that had formed and reformed every afternoon through one long conjunction, the brilliant flash (reflected sunlight? a hydrogen-fusion blast?) that Saheki saw in Tithonius Lacus on the first of December, 1951, as bright as a sixth-magnitude star. Somebody else would have to investigate these things. He would not.

But apart from such regrets, he was content enough. The northern hemisphere was a wise choice. Its seasons were better arranged because, just as on Earth, the northern hemisphere had its winter when it was closest to the Sun and so kept marginally warmer all year around. Winter there was 20 days shorter than summer; in the south, of course, it was the other way around. And although Home had never been observed to change shape or emit flashes of light, it had, in fact, been identified with a fair number of recent cloud formations. Kayman had not given up hope that some of the clouds were of water ice, if not water itself! He fantasied afternoon thundershowers on the Martian plain; and more soberly thought about the large stretches of limonite that had been identified nearby. Limonite contained bound water in quantity; it would be a resource for Roger, even if no Martian plant or animal had evolved to exploit it.

On the whole, he was content about everything.

He was en route to Mars! That was a source of great joy to him, for which he rendered thanks six times each day. Also, he had a hope.

Don Kayman was too good a scientist to confuse his hopes with observations. He would report what he found. But he knew what he *wanted* to find. He wanted to find life.

To the extent that the mission's purposes permitted, in the ninety-one Martian days he would be able to stay on the planet's surface, he would keep his eyes open. Everyone knew he would do this. It was in fact part of his contingent, time-permitting briefing instructions.

What not everyone knew was *why* Kayman was so interested.

Dejah Thoris was not quite dead for him. He still had hope that there would be life; not only life but intelligent life; not only intelligent life, but life with a soul to save and bring to his God.

Everything that happened on the spacecraft was under constant surveillance, and synoptic transmissions took place to Earth

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regularly. So we kept tabs on them. We watched the chess games and the arguments. We monitored Brad's currycombing of Roger's bodily functions, both meat and metal. We saw the night when Titus Hesburgh wept for five hours, gently and dreamily, rebuffing all of Kayman's offers to sympathize with a smile through tears. In some ways Hesburgh had the lousiest job aboard; seven months coming, seven months going and, in between, three months of nothing. He would be all alone in orbit while Kayman, Brad and Roger were disporting themselves on the surface. He would be lonely, and he would be bored.

He would be worse than that. Seventeen months in space was a practical quarantee that for the last few decades of his life he would be plagued by a hundred different muscle, bone and circulatory disorders. They exercised faithfully, wrestling each other and struggling against springs, flailing their arms and pumping their legs; that would not be enough. There was inevitably calcium resorption from the bone, and loss of muscle tone. For those who landed, the three months on Mars would make a great difference. In that time they would repair much of the damage, and be in better shape for the return. For Hesburgh there was no such break. His seventeen months in zero-G would be uninterrupted, and the experience of previous spacefarers had made the consequences clear. It meant lowering his life expectancy by a decade or more. And if he wept once in a while, there was no one who had better reason.

Time passed, time passed. A month, two months, six months. Beyond them in the skies the capsule with the 3070 was climbing after them; behind it, the magneto-hydrodynamic power plant with its crew of two. When they were two weeks out they ceremoniously switched watches, changing to new quartz-crystal timepieces set to the Martian day. From then on they lived by the Martian clock. It made little enough practical difference; the day for Mars is just a bit more than thirty-seven minutes longer than Earth's; but the difference was significant in their minds. One week out they began to speed Roger up.

For Roger the seven months had felt like thirty hours, subjective time. It had been time enough. He had eaten a few meals, exchanged several dozen communications with the rest of the crew. He had received messages from Earth and returned a few of them. He had asked for his guitar, been refused it on the grounds that he couldn't play it, asked for it anyway out of curiosity and found that that was

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quite true: he could pluck a string, but he could not hear the note that resulted from it. In fact, apart from the specially slowed-down tapes, he could hear nothing at all most of the time, and only a sort of high-pitched scurrying sound ever. Air did not conduct the sort of vibrations he could perceive. When the tape recorder was out of contact with the metal frame to which he was bound, he could not hear even it, nor could his own voice be made to record.

They warned him they were beginning to accelerate his perceptions. They left the curtain to his cubicle open, and he began to notice flickers of motion. He caught a glimpse of Hesburgh dozing nearby, then saw figures actually moving; after a time he even recognized who they were. Then they put him to sleep, to make final adjustments on his backpack, and when he woke up he was alone, the curtain was drawn — and he heard voices.

He pushed the curtain aside and looked out, and there was the smiling face of his wife's lover greeting him. "Good morning, Roger! Nice to have you with us again."

... And eighteen minutes later, twelve travel time and the rest decoding and relaying, the President watched it happen from a hundred million miles away, on the screen in the Oval Office.

He was not the only one. The TV nets put the scene on the air, and the satellites rebroadcast it all over the world. They were watching in the Under Palace in Peking, and inside the Kremlin; on Downing Street and the Champs Elysees and Ginza.

"Son of a bitch," said Dash historically, "they've made it."

Vern Scanyon was with him. "Son of a bitch," he echoed. Then he said, "Well, almost made it. They've still got to land."

"Any problem about that?"

Cautiously: "Not as far as I know —"

"God," said the President positively, "would not be so unfair. I think you and I are going to taste some bourbon right now; it's about that time."

They stayed and watched for half an hour, and a quarter of a bottle. On and off over the next few days they watched more, they and the rest of the world. The whole world saw Hesburgh making final checks and preparing the Mars lander for separation. Watched Don Kayman go through a dry run under the pilot's microscopic observation, since he would be at the controls for the trip down out of orbit. Watched Brad make a final, ultimate recheck on Roger's telemetry, find it all functioning in the green, and then do it over one

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more time. Watched Roger himself moving about the crew cabin and squeezing into the lander.

And watched the lander separate, and Hesburgh look wistfully out at its minue-delta flare as it began to drop out of orbit.

We figured that three and a quarter billion people watched the landing. It was not much to watch; if you have seen one landing, you have seen them all. But it was important.

It began at a quarter to four in the morning, Washington time, and the President had himself awakened to see it. "That priest," he said, frowning, "what kind of a pilot is he? If anything goes wrong —"

"He's checked out, sir," soothed his NASA aide. "Anyway, he's actually only about a third-place backup. The automatic sequencing is in primary control. If anything goes wrong, General Hesburgh is monitoring it from the orbiter, and he can override. Father Kayman doesn't have anything to do unless everything goes wrong at once."

Dash shrugged, and the aide noticed that the President's fingers were crossed. "What about the follow-up flights?" he asked, staring at the screen.

"No sweat at all, sir. The computer will inject into Mars orbit in thirty-two days, and the generator twenty-seven days later. As soon as the lander is down, General Hesburgh is going to perform a course correction and overtake the moon Deimos. We expect to land both the computer and the generator there, probably in the crater Voltaire; Hesburgh will make that determination for us."

"Um," said the President. "Has Roger been told who's on the generator spacecraft?"

"No, sir."

"Um." The President abandoned the television screen and got up. At the window, staring out at the pretty White House lawn, June-green and blossoming, he said, "There's a man coming over from the computer center in Alexandria. I'd like you to be here when he arrives."

"Yes, sir."

"Commander Chiaroso. Supposed to be pretty good. Used to be a professor at M.I.T. He says there's something strange about our projections about this whole project. Have you heard any gossip?

"No, sir," said the NASA aide, alarmed. "Strange, sir?"

Dash shrugged. "That's all I need," he said, "getting this whole son-of-a-bitching thing going and then finding out — Hey! What the hell's happening?"

On the TV screen the image was jumping and breaking up; it went

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out entirely, restored itself and disappeared again, leaving only the tracery of raster.

"That's all right, sir," said the aide quickly. "It's reentry buffeting. When they hit the atmosphere they lose video contact. Even the telemetry's affected, but we've got ample margins all around; it'll be all right."

The President demanded: "Why the hell is that? I thought the whole point was that Mars didn't *have* any atmosphere?"

"Not a lot, sir. But it does have some, and because it's smaller, it's got a shallower, flatter gravity well. In the upper atmosphere it's just about as dense as the Earth's is, at the same altitude, and that's where the buffeting happens."

"God damn it," snarled the President, "I don't like surprises! Why didn't somebody tell me this?"

"Well, sir —"

"Never mind! I'll take it up later. I hope surprising Torraway isn't going to be a mistake — Well, forget it. What's happening now?"

The aide looked not at the screen but at his watch. "Parachute deployment, sir. They've completed retrofire. Now it's just a matter of coming down. In a few seconds —" The aide pointed to the screen, which obediently built itself into a picture again. "There! They're in controlled descent mode now."

And they sat, and waited, while the lander slid down through the thin Martian air under its immense canopy, quintuple the size of a parachute built for air.

When it hit, the sound came a hundred million miles and then sounded like trash cans falling off a roof. But the lander had been built for it; and the crew were long since in their protective cocoons.

There was a hissing sound from the screen, and the clicking of cooling metal. And then Brad's voice.

"We're on Mars," he said prayerfully, and Father Kayman began to whisper the words from the Ordinary of the Mass: "Laudamas te, benedicimus te, adoramus te, glorificamus te. Gloria in excelsis Deo, et in terra pax hominibus bonae voluntatis."

And to the familiar words he added, "Et in Martis."

Chapter Fifteen

How the Good News Went from Mars to Earth

When we first realized that there was a serious risk that a major war would destroy civilization and make the Earth uninhabitable — which is to say, shortly after we collectively began to realize anything at all — we decided to take steps to colonize Mars. It wasn't easy for us. The whole

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human race was in trouble. Energy was in short supply the world over, which meant fertilizer was expensive, which meant people were hungry, which meant explosively dangerous tensions. The world's resources were none too ample for the bare necessity of keeping billions of people alive. We had to find ways to divert capacities that were badly needed elsewhere to long-range planning. We set up three separate think tanks and gave them all the facilities we could steal from daily needs. One explored options for solving the growing tensions on Earth. One was charged with setting up refuges on Earth itself, so that even if a thermonuclear war did occur a small fraction of us could survive. The third looked into extraterrestrial possibilities.

In the beginning it seemed as though we had a thousand options to choose from, and each of the three major tracks had branches that looked hopeful. One by one the tracks closed off. Our best estimates — not the ones we gave the President of the United States, but the private ones we showed to nobody but ourselves — were of point nine to ten nines probability of thermoculear war within a decade; and we closed down the center for solving international tensions in the first year. Setting up refuges was a little more hopeful. It developed that worst-case analysis indicated a few places on the Earth that would be unlikely to experience direct attack — Antarctica, parts of the Sahara, even some of Australia and a number of islands. Ten sites were selected. Each one had only a point zero one or less probability of being destroyed; if all ten were considered, the probability that they would all be destroyed was relatively insignificant. But fine-grain analysis showed that there were two flaws. For one, we could not be sure how much long-life isotope would remain in the atmosphere after such a war, and the indications were that there would be excessive levels of ionizing radiation for as much as a thousand years. Over that time scale, the probability that even one of the refuges would survive became far less than point five. Worst of all, there was the necessity for capital investment. To build the refuges underground and fill them with the immense quantity needed of complex electronic equipment, generators, fuel reserves and so on was, as a practical matter, impossible. There was no way for us to get the money.

So we terminated that think tank, and put all the resources we could manage into extraterrestrial colonization. At the beginning, that had looked like the least hopeful solution of all.

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But — almost! — we had managed to make it work. When Roger Torraway landed, that completed the first and hardest step. By the time the ships that were following him reached their positions, in orbit or on the surface of the planet, we would be able, for the first time, to plan for a future, with the survival of the race assured.

So we watched with great satisfaction as Roger stepped out on the surface of the planet.

Roger's backpack computer was a triumph of design. It had three separate systems, cross-linked and sharing facilities, but with enough redundancy so that all systems had point nine reliability at least until the 3070 backup computer reached orbit. One system mediated his perceptions. Another controlled the subsystems of nerve and muscle that let him walk and move. The third telemetered all of his inputs. Whatever he saw, we saw on Earth.

We had gone to some trouble to arrange this. By Shannon's Law there was not enough bandwidth to transmit everything, but we had included a random sampling feature. Approximately one bit per hundred was transmitted — first to the radio in the landing craft, where we had assigned one channel permanently for that purpose. Then rebroadcast to the orbiter, where General Hesburgh floated, watching the television screen while the calcium oozed out of his bones. From there, cleaned and amplified, it was burst-transmitted to whichever synchronous satellite of Earth was at that moment locked into both Mars and Goldstone. So what we all saw was only about one per cent "real." But that was enough. The rest was filled in by a comparison program we had written for the Goldstone receiver. Hesburgh saw only a series of stills; on Earth we broadcast what looked exactly like on-the-spot movies of whatever Roger saw.

So all over the Earth, on television sets in every country, people watched the beige and brown mountains that rose ten miles tall, saw the glint of Martian sunlight off the windowframes of the lander, could even read the expression on Father Kayman's face as he rose from prayer and, for the first time, looked out on Mars.

In the Under Palace in Peking the great lords of New People's Asia interrupted a planning session to watch the screen. Their feelings were mixed. It was America's triumph, not theirs. In the Oval Office President Deshatine's joy was pure. Not only was the triumph American, it was personal; he was identified forever as the President who had established humanity on

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Mars. Almost everybody was at least a little joyous — even Dorrie Torraway, who sat in the private room at the back of her shop with her chin in her hands, studying the message of her husband's eyes. And of course, in the great white cube of the project outside of Tonka, Oklahoma, everyone left on the staff watched the pictures from Mars almost all the time.

They had plenty of leisure for that. They didn't have much else to do. It was astonishing low empty the building became as soon as Roger was out of it.

They had all been rewarded, from the stock room boys up; a personal commendation for everyone from the President, plus a thirty-day bonus leave and a jump in grade. Clara Bly used hers to finish up her long-delayed honeymoon. Weidner and Freeling took the time to write a rough draft of Brad's paper, transmitting every paragraph to him in orbit as it came off their typewriters and receiving his corrections via Goldstone. Vern Scanyon, of course, had a hero's tour with the President, in fifty-four states and the principal cities of twenty foreign countries. Brenda Hartnett had appeared on television twice with her kids. They had been deluged with gifts. The widow of the man who had died to put Roger Torraway on Mars was now a millionaire. They had all had their hour of fame, as soon as the launch got off and Roger was en route, especially in those moments just before the landing.

Then the world looked out at Mars through the eyes of Roger, and the senses of the brother on Roger's back, and all their fame blew away. From then on it was all Roger.

We watched too.

We saw Brad and Don Kayman in their suits, completing the pre-egress drill. Roger had no need of a suit. He stood on tiptoe at the door of the lander, poised, sniffed the empty wind, his great black wings hovering behind him and soaking in the rays of the disconcertingly tiny, but disconcertingly bright, sun. Through the TV pickup inside the lander we saw Roger silhouetted against the dull beige and brown of the abrupt Martian horizon ....

And then through Roger's eyes we saw what he saw.

To Roger, looking out on the bright, jewel-like colors of the planet he was meant to live on, it was a fairyland, beautiful and inviting.

The lander had stretched out skeletal magnesium steps to stroke the surface of Mars, but Roger didn't need them. He jumped down, the wings fluttering — for balance, not for lift — and landed

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lightly on the chalky orange surface, where the wash of the landing rockets had scoured away the crust. He stood there for a moment, surveying his kingdom with the great faceted eyes. "Don't rush things," advised a voice in his head that came from Don Kayman's suit radio. "Better go through the exercise list."

Roger grinned without looking around. "Sure," he said, and began to move away. First he walked, then trotted, then he began to run. If he had sped through the streets of Tonka, here he was a blur. He laughed out loud. He changed the frequency responses of his eyes, and the distant towering hills flashed bright blue, the flat plain a mosaic of greens and yellows and reds. "This is great!" he whispered, and the receivers at the lander picked up the subspoken words and passed them on to Earth.

"Roger," said Brad petulantly, "I wish you'd take it easy until we get the jeep ready."

Roger turned. The other two were back at the steps of the lander, deploying the Mars vehicle from its fold-down condition behind its hatch.

He bounded back toward them joyously. "Need help?"

They didn't have to answer. They did need help; in their suits it was a major undertaking to slip the retaining strap off one of the basketwork wheels. "Move over," he said, and quickly freed the wheels and stretched the stilted legs into stand-by position. The jeep had both: wheels for the flat parts, stilts for climbing. It was meant to be the most flexible vehicle man could make for getting around Mars, but it wasn't. Roger was. When it was done he touched them and promised, "I won't go out of line of sight." And then he was gone, off to see the patches of color around a series of hummocks, Dali-bright and irresistible.

"That's dangerous!" Brad grumbled over the radio. "Wait till we finish testing the jeep! If anything happens to you, we're in trouble."

"Nothing will," said Roger, "and no!" He couldn't wait. He was using his body for what it had been built to do, and patience was gone. He ran. He jumped. He found himself a mile from the lander before he knew it; looked back, saw that they were creeping slowly after him and went on. His oxygenation system stepped up the pump-rate to compensate for the extra demands; his muscles met the challenge smoothly. It was not his muscles that propelled him but the servo-systems that had been built in instead; but it was the tiny muscles at the ends of the nerves that ordered the servos. All the practice paid off. It was no effort at all to

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reach a hundred miles an hour, leaping over small cracks and craters, bounding up and down the slopes of larger ones.

"Come back, Roger!" It was Don Kayman, sounding worried.

A pause, while Roger ran on; then a dizzying sense of movement in his vision, and another voice said:

"Go back, Roger! It's time."

He stopped flatfooted, skidded, flailed with his wings against the almost indetectable air, almost fell and caught himself. The familiar voice chuckled, "Come on, honey! Be a good boy and go back now."

Dorrie's voice.

And out of the distant thin whirl of drifting sand the colors coalesced into the shape of Dorrie to match the voice of Dorrie, smiling, not ten yards away, long legs disappearing into shorts, a gay halter for a top, her hair blown in the breeze.

The radio voice in his head laughed, this time in the tones of Don Kayman. "Surprised you, didn't we?" he demanded.

It took a moment for Roger to reply. "Yeah," he managed.

"It was Brad's idea. We taped Dorrie back on Earth. When you need an emergency signal, Dorrie will give it to you."

"Yeah," said Roger again. As he stared, the smiling figure turned wispy, the colors faded and it disappeared.

He turned and went back. The return trip took a lot longer than the joyous outbound run, and the colors were no longer quite so bright.

Don Kayman drove the jeep steadily toward the trudging shape of Roger Torraway, trying to get the hang of staying in the plunging seat without being thrown back and forth into the restraining belts. It was in no way comfortable. The suit that had been tailored to his body had developed tight spots and loose ones in the long months up from Earth — or maybe, he reminded himself fairly, he was the one who had swelled a little in some places and shrunk in others — he had not, he conceded, been wholly diligent about his exercises. Also he had to go to the bathroom. There was relief plumbing in the suit. He knew how to use it, but he didn't want to.

Above the discomfort was an overlay of envy and worry. The envy was a sin that he could purge himself of, whenever he could find someone to hear his confession — a venal sin at most, he thought, considering the manifest advantages Roger had over the other two. Worry was a worse sin, not against his God but against the success of the mission. It was too late to worry. Maybe it had been a mistake

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to set up the simulation of Roger's wife to punch home urgent messages — at the time, he hadn't known quite how complicated Roger's feelings were about Dorrie. But it was too late to do anything about it.

Brad didn't seem to have any worries. He was chuckling fondly over Roger's performance. "Did you notice?" he was demanding. "Didn't fall once! Perfect coordination. Normative match, bio and servo. I tell you, Don, we've got it knocked!"

"It's a little early to tell," Kayman said uneasily, but Brad went on. Kayman thought of turning off the voice in his suit helmet, but it was almost as easy to turn off his attention. He looked around him. They had landed near the sunrise terminator, but they had used more than half the Martian day in pre-exit check and in putting the jeep together. It was becoming late afternoon. They would have to be back before it was dark, he told himself; Roger would be able to navigate by starlight, but it would be chancier for Brad and himself. Maybe some other time, after they had had the practice .... He really wanted that very much, to stroll the ebony surface of a Barsoomian night, with the stars pinpoints of colored fire in a velvet black sky. But not yet.

They were on a great cratered plain. The size was hard to estimate at first. Looking around through his faceplate, Kayman had trouble remembering how far away the mountains were. His mind knew, because he knew every grid-square of the Martian maps for a hundred miles around their impact point. But his senses were deceived by the absolutely transparent visibility. The mountains to the west, he was aware, were forty miles away and nearly six miles high. They looked like nearby foothills.

He clutched the jeep down and stopped it; they were within a few yards of Roger. Brad fumbled himself free and slid clumsily out of the seat, lurching in an ungainly slow gait over toward Roger to study him. "Everything all right?" he said anxiously. "Of course it is; I can see that. How's your balance? Close your eyes, will you — I mean, you know, shut off your vision." He peered anxiously at the faceted hemispheres. "Did you? I can't tell, you know."

"I did," said Roger through the radio in his head.

"Great! No sense of dizziness, eh. No trouble keeping your balance? Keeping your eyes closed," he went on, circling Roger and staring at him from all angles, "swing your arms up and down a few times — fine! Now windmill them, opposite directions —" Kayman couldn't see his face, but

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he could hear the broad grin in the tone of Brad's voice. "Beautiful, Roger! Optimal all the way!"

"My congratulations to you both," said Kayman, out of the vehicle and watching the performance. "Roger?"

The head turned toward him, and though there was nothing about the appearance of the eyes that changed, Kayman knew Roger was looking at him. "I only wanted to say," he went on, not quite sure where the sentence was going to go, "that I'm — well, I'm sorry we sprang that bit about using Dorrie's image to convey messages on you. I have a feeling we've given you too many surprises."

"It's all right, Don." The trouble with Roger's voice, Kayman reflected again, was that you couldn't tell much from its tone.

"Having said that much," he said, "I think I ought to tell you that we do have another surprise for you. A pleasant one, I think. Sulie Carpenter's following us up here. Her ship should arrive in about five weeks."

Silence, and no expression. "Why," said Roger at last, "that's very nice. She's a fine person."

"Yes." But the conversation didn't seem to have anywhere to go after that, and besides Brad was impatient to put Roger through a whole bending and stretching series. Kayman allowed himself the privileges of a tourist. He turned away, staring toward the distant mountains, squinted at the bright sun, which even the auto-darkening of his faceplate didn't make quite comfortable, then looked around him. Clumsily he managed to kneel and to scoop up a clutch of pebbly dirt in his gloved hand. It would be his job next day to start the systematic collection of samples to return to Earth that was one minor task of the mission; even after half a dozen manned landings and nearly forty instrumented missions, there was still an insatiable demand for samples of Martian soil in the laboratories of Earth. Right now, however, he was allowing himself to daydream. There was plenty of limonite in this sand, and the quartz pebbles were far from round; the edges were not sharp, but neither had they been milled to roundness. He scraped into the soil. A yellowish powder rested on top; underneath it the material was darker and coarser. There were shiny specks, almost like glass. Quartz? he wondered, and idly scooped around one.

He froze, his hands cupping an irregular rounded blob of crystal.

It had a stem. A stem that thrust down into the ground. That spread and divided into dark, rough-surfaced tendrils.

Roots.

Don Kayman jumped up,

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whirling on Roger and Brad. "Look!" he shouted, the object plucked free in his gauntleted hand. "Dear God in Heaven, look at this!"

And Roger, coming up out of a crouch, spun and leaped at him. One hand knocked the glittering crystal thing spinning fifty yards into the air, bending the metal of the gauntlet. Kayman felt a sharp, quick pain in that forearm and saw the other hand striking toward his faceplate like the claw of an angry Kodiak bear; and that was the last he saw.

Chapter Sixteen

On the Perception of Perils

Vern Scanyon parked his car any-which-way across the painted yellow lines that marked his own place, jumped out and held his thumb against the elevator button. He had been awake less than forty minutes, but he was not at all sleepy. What he was was angry and apprehensive. The President's appointments secretary had waked him out of a sound sleep with a phone call to say that the President had diverted his flight to stop at Tonka — "to discuss the problems of the perceptual system of Commander Torraway." To kick ass, more accurately. Scanyon had not known anything about Roger's sudden attack on Don Kayman until he was in his car, hastening to the project building to meet the President.

"Morning, Vern." Jonny Freeling looked scared and angry, too. Scanyon brushed past him into his own office.

"Come on in," he barked. "Now, in words of one syllable. What happened?"

Freeling said resentfully, "It's not my responsibility to —"

"Freeling."

"Roger's systems overreacted a little. Apparently Kayman moved suddenly, and the simulations systems translated it into a threat; Roger defended himself and pushed Kayman away."

Scanyon stared.

"Broke his arm," Freeling amended. "It was only a simple fracture, General. No complications. It's splinted, it'll heal perfectly — he just has to get by with one functioning arm for a while. It's a pity for Don Kayman, of course —"

"Fuck Kayman! Why didn't he know how to act around Roger?"

"Well, he did know. He found something that he thought was indigenous life! That was pretty exciting. All he wanted to do was show it to Roger."

"Life?" Scanyon's eyes looked more hopeful.

"Some sort of plant, they think."

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"Can't they tell?"

"Well, Roger seems to have knocked it out of Kayman's hand. Brad went looking for it afterward, but he couldn't find it."

"*Jesus*," Scanyon snorted. "Freeling, tell me one thing. What kind of incompetents have we got working for us?" It was not a question that had a proper answer, and Scanyon didn't wait for one. "In about twenty minutes," he said, "the President of the United States is going to come through that door and he's going to want to know line by line what happened and why. I don't know what he's going to ask, but whatever it is, there's one answer I don't want to give him, and that's 'I don't know.' So tell me, Freeling. Tell me all over again what happened, why it went wrong, why we didn't think it would go wrong and how we can be *damn* sure it isn't going to go wrong again ...." It took a little more than twenty minutes, but then they had more; the President's plane touched down late, and by the time Dash arrived, Scanyon was as ready as he knew how to be. Even ready for the fury in the President's face.

"Scanyon," he snapped at once, "I warned you, no more surprises. This time is one too many, and I think I'm going to have to have your ass."

"You can't put a man on Mars without risks, Mr. President!"

Dash stared eye to eye for a moment, then said, "Maybe. What's the priest's condition?"

"He's got a broken radius, but it's going to be all right. There's something more important than that. He thinks he found life on Mars, Mr. President!"

Dash shook his head. "I know, some kind of plant. But he managed to lose it."

"For the moment. Kayman's a good man. If he said he found something important, he did. He'll find it again."

"I certainly hope so, Vern. Don't slide away from this. Why did this thing happen?"

"A slight overcontrol of his perceptual systems. That's it, Mr. President, and that's *all* it is. In order to make him respond quickly and positively, we had to build in some simulation features. To get his attention to priority messages, he sees his wife speaking to him. To get him to react to danger, he sees something frightening. That way his head can keep up with the reflexes we built into his body. Otherwise, he'd go crazy."

"Breaking the priest's arm wasn't crazy?"

"No! It was an accident. When Kayman jumped at him he interpreted it as an actual attack of some kind. He responded. Well, Mr. President, in this case it was wrong, and it cost us a broken arm,

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but suppose there had been a real threat? Any *kind* of a threat! He would have met it. Whatever it was! He's invulnerable, Mr. President. Nothing can ever catch him off guard."

"Yeah," said the President, and after a moment, "maybe so." He stared over Scanyon's head for a moment and said, "What about this other crap?"

"Which crap, Mr. President?"

Dash shrugged irritably. "As I understand it, there's something wrong with all our computer projections, especially the polls we took."

Alarm bells went off in Scanyon's head. He said reluctantly, "Mr. President, there's a lot of paper on my desk I haven't got through yet. You know I've been traveling a lot —"

"Scanyon," said the President, "I'm going now. Before you do anything else, I want you to take a look through the papers on your desk, and find that paper, and read it. Tomorrow morning, eight o'clock, I want you in my office, and then I want to know what's happening, specifically three things. First, I want to hear that Kayman's all right. Second, I want that living thing found. Third, I want to know the score on the computer projections, and it better be all right. So long, Scanyon. I know it's only five in the morning, but don't go back to bed."

By then we could have reassured Scanyon and the President about one thing. The object Kayman had picked up was indeed some form of life. We had reconstructed the sampled data through Roger's eyes, filtered out the simulations, and seen what he had seen. It had not yet occurred to the President or his advisors that that could be done, but it would. It was not possible to make out fine details, because of the limited number of bits available, but the object was shaped rather like an artichoke, coarse leaves pointed upward, and a little like a mushroom: there was a crystalline cap of transparent material over it. It possessed roots, and unless it was an artifact (point zero zero one probability, at most) it had to be a form of life. We did not find that very interesting except, of course, as it would reinforce general interest in the Mars project itself. As to the doubt cast on the computer simulations, we were considerably more interested. We had followed that development for some time, ever since the graduate student named Byrne had written a Systems-360 program to recheck his desk-calculator previous recheck of some of the poll results. We were as concerned about it as the President was. But the

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probability of any serious consequence there too appeared quite small, especially since everything else was going well. The MHD generator was almost ready for pre-orbit injection course corrections; we had selected an installation site for it in the crater called Voltaire on the moon, Deimos. Not far behind it was the vehicle that contained the 3070 and its human crew of two, including Sulie Carpenter. And on Mars itself they had already begun construction of permanent installations. They were a little behind schedule. Kayman's accident had slowed them down, not only because of what it did to him but because of what Brad then insisted on doing to Roger: field-stripping his shoulder-pack computer to test for glitches. There weren't any. But it took two Martian days to be sure; and then, because Kayman begged, they took time to find his life form. They found it, or not it, exactly, but dozens of other specimens of the same thing; and Brad and Roger left Kayman inside the lander to study it while they began building their domes.

The first step was to find an area of Mars which had suitable geology. The surface should be as much like soil as possible, but solid rock had to be not far below. It took half a day of pounding explosive spikes into the ground and listening to echoes to be sure they had that.

Then, laboriously, the solar generators were spread out, and the subsurface rock-bound water was boiled out. As the first tiny plume of steam appeared at the lip of the pipe, they cheered. It would have been easy to miss it. The utterly dry Martian air snatched every molecule up almost as soon as it left the pipe. But by leaning close to the valve at the end, one could see a faint, irregular misting that distorted shapes beyond it. It was water vapor, all right.

The next step was to spread out three great stretches of monomolecular film, the smallest first, the largest on top, and seal the topmost to the ground all around its periphery. Then they carried the pumps out to the basket-wheeled vehicle and started them going. The Martian atmosphere was extremely thin, but it was there; the pumps would ultimately fill the domes, partly with the compressed carbon dioxide and nitrogen from the atmosphere, partly with the water vapor they were boiling out of the rock. There was, to be sure, no oxygen to speak of in any of that, but they didn't have to find oxygen; they would make it, in exactly the same way Earth made its oxygen: through the intercession of photosynthetic plants.

It would take four or five days

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for the outer dome to fill to its planned half pound of pressure. Then they would start filling the second one, up to about a pound and a half (which would increase the pressure in the diminishing space of the outer shell to about a full pound). Then, finally, they would fill the inner dome to four pounds, and so they would have an environment in which people could live without pressure suits, and even breathe, as soon as the crops gave them breathing material.

Of course, Roger didn't need any of that. He didn't need the oxygen; he didn't even need the plants for food, or not much and not for a long time. He could stay, perhaps, forever living off the unfailing light of the sun for most of his evergy, plus what would be microwaved down from the MHD generator once it was in place. What was needed for the minuscule remaining part of him which was raw animal could easily be supplied by the concentrated foods from the ship for a long time; and only then, after perhaps a couple of Martian years, would he have to begin to depend on what came out of the hydroponics tanks and the seeds they were already sprouting in sealed cold-frames under the canopies.

It all took several days, since Kayman wasn't a great deal of help. Getting in and out of a pressure suit was agony for him. So they left him in the lander most of the time. When it came time to lug the tanks of carefully hoarded sludge from their toilet facilities over to the dome, Kayman lent a hand. "Exactly one hand," he said, trying to handle the magnesium-shafted rake by wrapping his good arm around it.

"You're doing fine," Brad encouraged. There was enough pressure in the innermost dome now to lift it above their heads, but not quite enough to let them take off their pressure suits. Which was just as well, Brad realized; this way they couldn't smell what they were raking into the sterile soil.

By the time the dome was fully extended, the pressure was up to a hundred millibars. This is the pressure of Earth's atmosphere at some ten miles above sea level. It is not an environment in which naked man can survive and work for very long, but it is an environment in which he will only die if something kills him. Half that pressure would be lethal instantly; his body temperature would boil his fluids away.

But when the internal pressure hit the 100-millibar level, all three of them crowded through the three successive airlocks, and Brad and Don Kayman ceremoniously took off their pressure suits. They fitted nosepieces, something like those of

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an aqualung, in place for breathing; there was still no oxygen to speak of inside the dome. But they got pure oxygen from the tanks on their backs, and with that they were, for the first time, almost as free as Roger, inside a transplanted bit of earth that was three hundred feet across and as tall as a ten-story building.

And inside it, in orderly rows, the seeds they had transplanted were already beginning to sprout and grow.

Meanwhile —

The vehicle with the magneto-hydrodynamic generator attained Mars orbit and, with General Hesburg helping, matched orbit with Deimos and nestled into the crater. It was a perfect coupling. The vehicle swung out its struts to touch the rock of the moon and augured them in, and locked. A brief jet from the maneuvering system tested its stability: it was now a part of Deimos. The power system began to sequence toward full operational mode. A fusion flame woke the plasma fires. Radar reached out to find the target on the lander, then locked on to the dome. Power began to flow. The energy density of the field was low enough for Brad and Kayman to walk around in it unaware, and to Roger it was like the basking warmth of sunlight, but the foil strips in the outer dome gathered the microwave energy and channeled it to the pumps, the batteries.

The fusion fuel had a life of fifty years. For that long at least, there would be energy for Roger and his backpack computer on Mars, whatever happened on Earth.

And meanwhile —

There were other couplings.

In the long spiral up from Earth, Sulie Carpenter and her pilot, Dinty Meighan, had had time heavy on their hands and had found a way to use it.

The act of copulation in free fall presents certain problems. First Sulie had to buckle one strand of webbing around her waist; then Dinty embraced her with his arms, and she him with her legs. Their motions were underwater-slow. It took Sulie a long, gentle, dreamy time to come to orgasm, and Dinty was even slower. When they were finished they were hardly even breathing hard. Sulie stretched and yawned, arching her belly against the retaining strap. "Nice," she said drowsily. "I'll remember that."

"We both will, honey," he said, misunderstanding her. "I think that's the best way we screw. Next time —"

She shook her head to interrupt him. "No next time, Dinty dear. That was it."

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He pulled his head back to look at her. "What?"

She smiled. Her right eye was still only inches from his left, and their view of each other curiously foreshortened. She craned forward and rubbed her cheek gently against his bristly one.

He scowled and detached himself, suddenly feeling naked where before he had been only bare. He pulled his shorts out from behind the handhold where he had cached them and slid into them.

"Sulie, what's the matter?"

"Nothing's the matter. We're almost ready for orbit, that's all."

He pushed himself backward across the cramped compartment to get a better look at her. She was worth looking at. Her hair had gone back to muddy blonde and her eyes were brown without the contact lenses; and even after almost two hundred days of never being more than ten yards from him, she still looked good to Dinty Meighan.

"I didn't think you had any surprises left," he marveled.

"You never can tell about a woman."

"Come on, Sulie! What's this all about? You sound as though you've been planning — Hey!" A thought struck him. "You volunteered for this mission — not to go to Mars, but to go to some guy! Right? One of the guys ahead of us?"

"You're very quick, Dinty. Not," she said fondly. "where I don't want you to be, though."

"Who is it, Brad? Hesburgh? Not the priest? — oh, wait a minute!" He nodded. "Sure! The one you were mixed up with back on Earth. The Cyborg!"

"Colonel Roger Torraway, the human being," she corrected. "As human as you are, except for some improvements."

He laughed, more resentment then humor. "A lot of improvement and no balls at all."

Sulie unstrapped herself. "Dinty," she said sweetly, "I've enjoyed sex with you, and I respect you, and you've been about as comfortable to be with as any human being possibly could be on this God-damned eternity trip. But there are some things I don't want you to say. You're right. Roger doesn't happen to have any testicles, right at this exact moment. But he's a human being I can respect and love, and he's the only one like that I've found lately. Believe me, I've looked."

"Thanks!"

"Oh, don't do this, dear Dinty. You know you're not really jealous. You've already got a wife."

"Next year I do! That's a long way off." She shrugged, grinning. "Ah, but Sulie! There are some things you can't kid me about. You love screwing!"

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"I like body contact and intimacy," she corrected, "and I like coming to orgasm. I like both those things better with someone I love, Dinty. No offense."

He scowled. "You've got a long wait, sweetie."

"Maybe not."

"The hell you say. I won't see Irene for seven months. But you — you won't be back any faster than I will, and then it only begins. They've got to put him back together for you. Assuming they *can* put him back together. It sounds like a long time between fucks."

"Oh, Dinty. Don't you think I've thought this all out?" She patted him in passing, on the way to her own locker. "Sex isn't just coitus. There are more ways to orgasm than with a penis in my vagina. And there's more to sex than orgasm. Not to mention love. Roger," she went on, wriggling into her jumpsuit, not so much for modesty as for pockets, "is a resourceful, loving person, and so am I. We'll make out — anyway, until the rest of the colonists land."

"Rest?" he struggled. "Rest of the *colonists*?"

"Haven't you figured it out yet? I'm not going back with all of you, Dinty, and I don't think Roger is either. We're going to be Martians!"

And meanwhile, in the Oval Room of the White House, the President of the United States was confronting Vern Scanyon and a young, coffee-colored man with tinted glasses and the build of a football player. "So you're the one," he said, appraising him. "You think we don't know how to run a computer study."

"No, Mr. President," the young man said steadily. "I don't think that's the problem."

Scanyon coughed. "Byrne here," he said, "is a graduate student on work-study from M.I.T. His thesis is on sampling methodology, and we gave him access to some of the, ah, classified material. Especially public-opinion studies about attitudes on the project."

"But not to a computer," Byrne said.

"Not to a big one," Scanyon corrected. "You had your own desk dataplex."

The President said mildly, "Get on with it, Scanyon."

"Well, his results came out different. According to his interpretations, the public opinion on the whole question of colonizing Mars was, well, apathy. You remember, Mr. President, there was some question about the results at the time? The raw results weren't encouraging at all? But when we played them through analysis, they came out positive to, what do you

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call it, two sigmas. I never knew why."

"Did you check?"

"Certainly, Mr. President! Not me," Scanyon added quickly; "that wasn't my responsibility. But I'm satisfied that the studies were verified."

Byrne put in, "Three different times, with three different programs. There were minor variations, of course. But they all came out significant and reliable. Only when I repeated them on my desk machine, they didn't. And that's the way it is, Mr. President. If you work up the figures on any big computer in the net, you get one result. If you work them up on a small machine isolated, you get another."

The President drummed the balls of his thumbs on the desk. "What's your conclusion?"

Byrne shrugged. He was twenty-three years old, and his surroundings intimidated him. He looked to Scanyon for help and found none; he said, "You'll have to ask somebody else that one, Mr. President. I can only give you my own conjecture. Somebody's buggering our computer network."

The President rubbed the left lobe of his nose reflectively, nodding slowly. He looked at Byrne for a moment and said, without raising his voice, "Carousso, come on in here. Mr. Byrne, what you see and hear in this room is top secret. When you leave, Mr. Carousso will see that you are informed as to what that means to you in detail; basically, you are not to talk about it. To anyone. Ever."

The door to the President's anteroom opened and a tall, solid man with a self-effacing air walked in. Byrne stared at him wonderingly: Charles Carousso, the head of the C.I.A.! "What about it, Chuck?" the President asked. "What about him?"

"We've checked Mr. Byrne, of course," said the agency man. His words were precise and uninflected. "There isn't anything significant adverse to him — you'll be glad to know, I suppose, Mr. Byrne. And what he says checks out. It isn't only the public-opinion surveys. The war-risk projections, the cost/effectiveness studies — run on the net, they come out one way; run on independent calculating machines, they come out another. I agree with Mr. Byrne. Our computer net has been compromised."

The President's lips were pressed together, as though he were holding back what he wanted to say. All he allowed to come out was, "I want you to find out how this happened, Chuck. But the question now is, who? The Asians?"

"No, sir! We checked that out. It's impossible."

"Bullshit it's impossible!"

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roared the President. "We know they already did tap our lines once, on the simulation of Roger Torraway's systems!"

"Mr. President, that's an entirely different case. We found that tap and neutralized it. It was in the groundlines cable on a nonsensitive linkage. The comm circuits on our major machines are absolutely leakproof." He glanced at Byrne. "You have a report on the techniques involved, Mr. President; I'll be glad to go over it with you at another time."

"Oh, don't worry about me," said Byrne, smiling for the first time. "Everybody knows the links are multiply scrambled. If you've checked me out, I'm sure you found out that a lot of us graduate students fool around trying to tap in, and none of us make it."

The agency man nodded. "As a matter of fact, Mr. President, we tolerate that; it's good field-testing for our security. If people like Mr. Byrne can't think up a way past the blocks, I doubt the Asians can. And the blocks are leakproof. They have to be. They control circuits that go to the War Machine in Butte, the Census Bureau, UNESCO —"

"Wait a minute!" barked the president. "Our machines tie in with UNESCO, which the Asians use, *and* the War Machine?"

"There is absolutely no possibility of a leak."

"There's *been* a leak, Carousso!"

"Not to the Asians, Mr. President."

"You just finished telling me there's one wire that goes out of our machine to the War Machine and another that goes straight to the Asians, with a detour through UNESCO!"

"Even so, Mr. President, I absolutely guarantee it's not the Asians. We would know that. *All* major computers are cross-linked to some extent. That's like saying there's a road from everywhere to everywhere else. Right, there is. But there are roadblocks. There is no *way* the NPA can get access to the War Machine, or to most of these studies. Even so, if they had done it, we would know from covert sources. They haven't. And," he went on, "in any case, Mr. President, can you think of any reason why the NPA would distort results in order to compel us to colonize Mars?"

The President drummed his thumbs, looking around the room. At last he sighed.

"I'm willing to go along with your logic, Chuck. But if it wasn't the Asians that buggered our computers, then who?"

The Agency man was morosely silent.

"And," Dash snarled, "for Christ's sake, *why*?"

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Chapter Seventeen

A Day in the Life of a Martian

Roger could not see the gentle shower of microwave energy coming down from Deimos, but he could feel it as a luxury of warmth. When he was nearby he preened his wings in it, soaking up strength. Outside the beam, he carried part of it with him in his accumulators. There was no reason for him to hoard his strength now. More strength poured down from the sky whenever Deimos was above the horizon. There were only a few hours in each day when neither the sun nor the farther moon were in the sky, and his storage capacity was multiply adequate for those brief periods of drought.

Inside the domes, of course, the metal-foil antennas stole the energy before it reached him, and so he limited his time with Brad and Kayman. He didn't mind. It was what he preferred. Every day the gap between them widened anyway. They were going back to their own planet, and Brad at least had begun to count the hours. He was going to stay on his. He had not told them that, yet, but he had made up his mind. Earth had begun to seem like a pleasant, quaint foreign place he had visited once and hadn't much liked. The pains and perils of terrestrial humanity were no longer his. Not even when they had been his own personal pains, and his own fears.

Inside the dome Brad, wearing G-string undershorts and a demand tank of oxygen, was happily planting carrot seedlings between the stands of Siberian oats. "Want to give me a hand, Rog?" His voice was reedily high in the thin atmosphere; he took frequent sips of oxygen from the mouthpiece that hung next to his chin, and then when he breathed out, the voice was fractionally deeper, but still strange.

"No, Don wants me to pick up some more specimens for him. I'll be gone overnight."

"All right." Brad was more interested in his seedlings than in Torraway, and Torraway was no longer very interested in Brad. Sometimes he would remind himself that this man had been his wife's lover, but in order for that to feel like anything he had to remind himself that he had a wife. It didn't seem worth the effort. More interesting was the challenge of the high cupped valley just over that farther range of hills, and his own private farm plot. For weeks now he had been bringing samples of Martian life back to show Don Kayman. They were not plentiful — two or three together in a clump, perhaps, and nothing else for hundreds of meters around. But they were not hard to find. Not for

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him. Once he had learned to recognize their special color — the hard UV lengths that their crystal caps reflected away from them, to let them survive in the harsh radiation environment — it was reflexive to filter his vision bands to see only that wavelength in color, and then they stood out a kilometer away.

So he had brought back a dozen of them and then a hundred; there seemed to be four distinct varieties, and it was not long before Kayman asked him to stop. He had all the samples he needed to study, and half a dozen more of each in formalin to bring back to Earth, and his gentle conserving soul was uneasy at despoiling the ecology of Mars. Roger began replanting some of them near the dome. He told himself it was to see whether the overflow of energy beamed down from the generator did native life forms any harm.

But what it was, he knew in his heart, was gardening. It was his planet, and he was beautifying it for himself.

He let himself out of the dome, stretched luxuriously for a moment in the double warmth of sun and microwave and checked his batteries. They could use topping off; he deftly plugged the leads into his own backpack and the gently whining accumulator at the base of the dome and, without looking toward the lander, said, "I'm going to take off now, Don."

Kayman's voice responded instantly over the radio. "Don't be out of touch more than two hours, Roger. I don't want to have to come looking for you."

"You worry too much," said Roger, detaching the leads and stowing them away neatly.

"You're only superhuman," grumbled Kayman. "You're not God. You could fall, break something —"

"I won't. Brad? So long."

Inside the triple dome Brad looked up over the armpit-high stalks of wheat and waved. His features could not be made out through the filmy domes; the plastic had been formulated to cut out the worst of the UV, and it blurred some of the visual wavelengths as well. But Roger could see his wave. "Take care. Give us a call before you go out of line of sight, so we'll know when to start worrying."

"Yes, mother." It was curious, Roger reflected. He was actually feeling rather fond of Brad. The situation interested him as an abstract problem. Was it because he was a gelding? There was testosterone circulating in his system; the steroid implant they had given him took care of that. His

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dreams were sometimes sexual, and sometimes of Dorrie; but the hollow despair and the anger he had lived with on Earth had attenuated on Mars.

He was already half a mile from the dome, running along easily in the warm sunlight, each step coming down precisely where it would find secure footing and each thrust lifting him surely an exact distance up and ahead. His vision was on low-energy surveillance mode, taking in everything in a moving teardrop shape whose point was where he was and whose lobe, fifty yards across, was more than a hundred meters in front of him. He was not unaware of the rest of the landscape. If something unusual had appeared, above all if something had moved, he would have seen it at once. But it did not distract him from his musings. He tried to remember what sex with Dorrie had been like. It was not hard to recall the objective, physical parameters. Much harder to feel what he had felt in bed with her; it was like trying to recall the sensuous joy of a chocolate malted when he was eleven, or his first marijuana high at fifteen. It was easier to feel something about Sulie Carpenter, although as far as he could remember he had never touched any part of her but her fingertips, and then by accident. (Of course, she had touched every part of him ....) He had been thinking, from time to time, about Sulie's coming to Mars. It had seemed threatening at first. Then it had seemed interesting, a change to look forward to. Now — Now, Roger realized, he wanted it to happen soon, not in four days, when she was due to land after her pilot completed the on-site tests of the 3070 and the MHD generator. *Soon.* They had exchanged a few casual greetings by radio. He wanted her closer than that. He wanted to touch her —

His wife's image formed in front of him, wearing that same monotonous sunsuit. "Better check in, honey," she said.

Roger stopped and looked around, on full vision mode in the Earth-normal spectrum.

He was almost halfway to the mountains, a good ten kilometers from the dome and the lander. He had been going uphill, and the flat terrain had begun to be rolling; he could barely see the top of the dome, and the tip of the antennas of the lander was a tiny spike beyond it. Without conscious effort his wings deployed themselves behind him to make his radio signal more directional, as a shouting man might megaphone his hands around his mouth. "Everything's okay," he said, and Don Kayman's voice answered inside his head:

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"That's fine, Roger. It'll be dark in three hours."

"I know." And after dark the temperature would plummet; six hours from now it might touch a hundred and fifty degrees below zero. But Roger had been out in the dark before, and all of his systems had performed beautifully. "I'll check with you again when I'm high enough on a slope to reach you," he promised, turned and started once more toward the mountains. The atmosphere was hazier than it had been. He allowed himself to feel his skin receptors and realized that there was a growing Wind. Sandstorm? He had lived through them, too; if it got bad he would hedgehog somewhere until it stopped, but it would have to be very bad to make that necessary. He grinned inside himself — he had not reliably learned how to do it with his new face — and loped on ....

At sunset he was in the shadow of the mountains, high enough up to see the dome clearly, more than 20 kilometers away.

The sandstorm was all below him now and seemed to be moving away. He had stopped briefly twice and waited, wings furled around him. But that had been only routine caution; at no time had it been more than an annoyance. He cupped the wings behind him and said through his radio:

"Don? Brad? It's your wandering boy reporting in."

The reply inside his head when it came, was scratchy and distorted, an unpleasant feeling, like gritting one's teeth on emery cloth. "Your signal's lousy, Rog. Are you okay?"

"Sure." But he hesitated. The static from the storm was bad enough so that he had not been sure, at first, which of his companions was talking to him; only after a moment had he identified the voice as Brad's. "Maybe I'll start back now," he said.

The other voice, even more distorted: "You'll make an old priest happy if you do, Roger. Want us to come out and meet you?"

"Hell, no. I can move faster than you can. Go to sleep; I'll see you in four or five hours."

Roger chatted a moment, than sat down and looked around. He wasn't tired. He had almost forgotten what it was like to be tired; he slept an hour or two, most nights, and napped from time to time during the day, more out of boredom than fatigue. The organic part of him still imposed some demands on his metabolism, but the crushing bone-weariness of prolonged exertion was no longer part of his experience. He sat because it pleased him to sit on an outcropping of rock and stare across the valley of his home. The

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long shadow of the mountains had already passed the dome, and only the peaks on the far side were still lighted. He could see the terminator clearly; Mars's thin air did not diffuse the shadow much. He could almost see it move.

Overhead the sky was brilliantly beautiful. It was easy enough to see the brighter stars even by daylight, especially for Roger, but at night they were fantastic. He could clearly make out the different hues: steel-blue Sirius, bloody Aldebaran, the smoky gold of Polaris. By expanding his visible spectrum into the infrared and ultraviolet he could see new, bright stars whose names he did not know; perhaps they had no common names, since apart from himself they had been seen as bright objects only by astronomers using special plates. He pondered about the question of name-giving rights; if he was the only one who could see that bright patch there in Orion, did he have the right to christen it? Would anybody object if he called it "Sulie's Star?"

For that matter, he could see what was, for the moment, Sulie's actual star ... or heavenly body; Deimos was not a star, of course. He stared up at it and amused himself trying to imagine Sulie's face —

"ROGER, HONEY! YOU —"

Torraway jumped straight up and landed a meter away. The scream inside his head had been deafening. Had it been real? He had no way to tell; the voices from Brad or Don Kayman and the simulated voice of his wife sounded equally familiar inside his head. He was not even sure whose voice it had been — Dorrie's? But he had been thinking about Sulie Carpenter, and the voice had been so queerly stressed that it could have been either, or neither of them.

And now there was no sound at all, or none except for the irregular clicks, squeaks and scrapes that came up from the rock as the Martian crust responded to the rapidly dropping temperature. He was not aware of the cold as cold; his internal heaters kept the feeling part of him at constant temperature and would go on doing so easily all through the night. But he knew that it was at least fifty below now.

Another blast:

"ROG — THINK YOU OUGHT —"

Even with the warning of the time before, the raucous shout was painful. This time he caught a quick fugitive glimpse of Dorrie's simulated image, standing queerly on nothing at all a dozen meters in the air.

Training took over. Roger turned toward the distant dome, or where he thought it had been,

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cupped his wings behind him and said clearly:

"Don! Brad! I've got some kind of a malfunction. I'm getting a signal but I can't read it."

He waited. There was no response, nothing inside his head except his own thoughts and a confused grumbling that he recognized as static.

"ROGER!"

It was Dorrie again, ten times life-size, towering over him, and on her face a grimace of wrath and fear. She seemed to be reaching down toward him, and then she bent curiously sidewise, like a television image flickering off the tube, and was gone.

Roger felt a peculiar pain, tried to dismiss it as fear, felt it again and realized it was cold. There was something seriously wrong. "May Day!" he shouted. "Don! I'm in trouble — help me!" The dark distant hills seemed to be rippling slowly. He looked up. The stars were turning liquid and dripping from the sky.

In Don Kayman's dream, he and Sister Clotilda were sitting on hassocks in front of a waterfall, eating sponges. Not candy; kitchen sponges, dipped into a sort of fondue. Clotilda was warning him of danger. "They're going to throw us out," she said, slicing off a square of sponge and impaling it on a two-pronged silver fork, "because you got a C in homiletics —" dipping it in the copper-bottomed dish over the alcohol flame — "and you've got to, just got to, wake up —"

He woke up.

Brad was leaning over him. "Come on, Don. We've got to get out of here."

"What's the matter?" Kayman pulled the sleeping bag over his chest with his good hand.

"I can't get an answer out of Roger. He didn't answer. I sent him a priority signal. Then I thought I heard him on the radio, but very faint. He's either out of line of sight, or his transmitter isn't working."

Kayman wriggled out of the bag and sat up. At times like this, when first awakening, his arm hurt the most, and it was hurting now. He put it out of his mind. "Have you got a position fix?"

"Three hours ago. I couldn't get a bearing on this last transmission."

"He can't be far off that line." Kayman was already sliding into the legs of his pressure suit. The next part was the hardest, trying to ease the splinted forearm into the sleeve. Among them, they had managed to stretch it a little, sealing the beginnings of a rip, but it was barely possible, would not be easy even under the best of

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conditions. Now, trying to hurry, it was infuriating.

Brad was already in his suit and throwing equipment into a bag. "Do you think you're going to perform an emergency operation out there?" Kayman demanded.

Brad scowled and kept on. "I don't know what I'll have to do. It's full night, Don, and he's up at least a thousand feet. It's cold."

Kayman closed his mouth. By the time he was zipped in, Brad had long since left the lander and was waiting at the wheel of the Mars vehicle. Kayman clambered aboard painfully, and they were moving before he had a chance to belt himself down. He managed to cling with heels and the one unbendable arm while buckling himself in with the other hand, but it was a close thing. "Any idea of distance?" he asked.

"In the hills somewhere," said Brad's voice in his ear; Kayman winced, and turned down the volume on his radio.

"Maybe two hours?" he guessed, calculating rapidly.

"If he's already started back, maybe. If he can't move — or if he's moving around out there, and we have to try to track him with RDF —" The voice stopped. "I think he's all right as far as temperature goes," Brad went on after a minute. "But I don't know. I don't know what happened."

Kayman stared ahead. Past the bright field of light from the vehicle's headlight there was nothing to see, except that the glittering field of stars was cut off, like the scalloped edge of a doily, at the horizon. That was the mountain ridge. It would be that, Kayman knew, that Brad was using as a guide; aiming always at that lowest point between the double peak on the north and the very high one just to the south. Bright Aldebaran was hanging over that higher peak, a good enough navigation aid in itself, at least until it set in an hour or so.

Kayman keyed in the vehicle's high-gain antenna. "Roger," he said, raising his voice, although he knew that made no difference. "Can you hear me? We're coming out to meet you."

There was no answer. Kayman leaned back in the contoured seat, trying to minimize the swaying jolts of the vehicle. It was bad enough, rolling on the basket-weave wire wheels across the flattest part of the terrain. When they began trying to climb, using the stiltlike legs, he suspected he might be thrown clear out of the vehicle, belt and all, and was certain he would at least be sick. Ahead of them the jerking beam of the headlight was picking out a dune, a rock outcropping, sometimes throwing back a lance of light from a crystal face. "Brad,"

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he said, "doesn't that light drive you crazy? Why don't you use the radar display."

He heard a quick intake of breath on his suit radio, as though Brad had been about to swear at him. Then the suited figure next to him reached down to the toggles on the steering column. The bluish panel just under the sandscreen lit up, revealing the terrain just in front of them; and the headlight winked off. It was easier to see the black outline of the mountains now.

Thirty minutes. At most, a quarter of the way there.

"Roger," Kayman called again. "Can you hear me? We're en route. When we get close enough we'll pick you up on your target. But if you can, answer now —"

There was no answer.

A rice-grain argon bulb began to blink rapidly on the dashboard. The two men looked at each other through their faceplates, and then Kayman leaned forward and clicked the frequency settings to the orbit channel. "Kayman here," he said.

"Father Kayman? What's going on down there?"

The voice was female, which meant, of course, Sulie Carpenter. Kayman chose his words carefully: "Roger's having some transmission trouble. We're going out to check it."

"It sounds like more than plain trouble. I've been listening to you trying to raise him." Kayman didn't answer, and her voice went on: "We've got him located, if you want a fix — ?"

"Yes!" he shouted, furious at himself; they should have thought of Deimos's RDF facility right away. It would be easy for Sulie or either of the orbiting astronauts to guide them in.

"Grid coordinates three poppa one seven, two two zebra four oh. But he's moving. Bearing about eight nine, speed about twelve kilometers per hour."

Brad glanced at their own course and said, "Right on. That's the reciprocal; he's coming right for us."

"But why so slowly?" Kayman demanded. A second later the girl's voice came:

"That's what I want to know. Is he hurt?"

Kayman said irritably, "We don't *know*. Have you tried radio contact?"

"Over and over — wait a minute." Pause, and then her voice again: "Dinty says we'll keep him located as long as we can, but we're getting to a bad angle. So I wouldn't rely on our positions past — what? Maybe another forty-five minutes. And in about twenty minutes after that we'll be below the horizon entirely."

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Brad said, "Do what you can. Don? Hold on. I'm going to see how fast this son of a bitch will go."

And the lurching of the vehicle tripled as Brad accelerated. Kayman fought off being sick inside his helmet long enough to lean forward and study the speedometer. The trip recorder rolling off the strip map along the side of the radar screen told the rest of the story: even if they could maintain their present speed, Deimos would have set before they could reach Roger Torraway.

He switched back to the directional high-gain. "Roger," he called. "Can you hear me? Call in!"

Thirty kilometers away, Roger was at bay inside his own body.

To his perceptions he was racing back home, at a strange gait like a high-speed heel-and-toe race. He knew his perceptions were wrong. He did not know how wrong; he could not be sure in what ways; but he knew that the brother on his back had tampered with his time sense, as well as with his interpretations of the inputs of his senses; and what he knew most surely of all was that he was no longer in control of what happened to him. The gait, he was intellectually certain, was a plodding slow walk. It *felt* as though he were running. The landscape was flowing by as rapidly, to his perceptions, as though he were racing at full speed. But full speed implied soaring bounds, and there was no time when both of his feet were off the ground at once; conclusion: he was walking, but the backpack computer had slowed down his time sense, probably to keep him reasonably tranquil.

If so, it was not succeeding.

When the backpack brother took over control, it had been terrifying. First he had stood straight up, and locked; he could not move, could not even speak. All around him the black sky was rippling with streaks of aurora, the ground itself shimmering like heat waves on a desert; phantom images danced in and out of his vision. He could not believe what his senses told him, nor could he bend a single finger. Then he felt his own hands reaching behind him, palping and tracing the joints where wings came to shoulder blades, seeking out the cables that led to his batteries. Another frozen pause. Then the same thing, feeling around the terminals of the computer itself. He knew enough to know that the computer was checking itself; what he did not know was what it was finding out or what it could do about it when it located the fault. Pause again. Then he felt his fingers questing into the jacks where he plugged in the recharge cables —

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A violent pain smote him, like the worst of all headaches, like a stroke or a blow from a club. It lasted only a moment, and then it was gone, leaving no more of itself than an immense distant flash of lightning. He had never felt anything like it before. He was aware that his fingers were gently, and very skillfully, scraping at the terminals. There was another quick surge of pain as, apparently, his own fingers made a momentary short; then he felt himself closing the flap, and realized he hadn't done that when he recharged at the dome.

And then, after another momentary stoppage of everything, he had begun to move slowly, carefully down the slope toward the dome.

He had no idea how long he had been walking. At some point his time perception had been slowed, but he could not even say when that had been. All of his perceptions were being monitored and edited. He knew that, because he knew that that section of the Martian terrain that he was traversing was not intrinsically softly lighted and in full color, while everything around was nearly formless black. But he could not change it. He could not even change the direction of his gaze. With metronome regularity it would sweep to one side or the other, less frequently scan the sky or even turn to look back; the rest of the time it was unwaveringly on the road he was treading, and he could see only peripherally the rest of the nightscape.

And his feet twinkled heel-and-toe, heel-and-toe — how fast? A hundred paces to the minute? He could not tell. He thought of trying to get some idea of tne time by observing the clearing of the stars above the horizon, but although it was not difficult to count his steps, and to try to guess when those lowest stars had climbed four or five degrees — which would be about ten minutes — it was impossible to keep all of that in mind long enough to get a meaningful result. Apart from the fact that his vision kept dancing away from the horizon without warning.

He was wholly the prisoner of the brother on his back, subject to its will, deceived by its interpretations, and very much a worried man.

What had gone wrong? Why was he feeling cold, when there was so little of him that could feel a sensory reality at all? And yet he yearned for the rising of the sun, dreamed wistfully of basking in the microwave radiation from Deimos. Painfully, Roger tried to reason through the evidence as he knew it. Feeling cold. Needing energy inputs: that was the interpretation of that cue. But why would he need

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more energy when he had fully charged his batteries? He dismissed that question because he could see no answer to it, but the hypothesis seemed strong. It accounted for the low-energy mode of travel; walking was far slower than his usual leaping run, but in kwh/km terms it was far more cost-effective. Perhaps it even accounted for the glitches in his perceptual systems. If the backpack-brother had discovered before he did that there was insufficient energy for foreseeable needs, it would surely ration the precious store to the most essential needs. Or what it perceived as most essential: travel, keeping the organic part of him from freezing; conducting its own information-handling and control procedures. Which, unfortunately, he was not privy to.

At least, he reflected, the primary mission of the backpack computer was to protect itself, which meant keeping the organic part of Roger Torraway alive. It might steal energy from the part that would keep him sane: deprive him of communications, interfere with his perceptions. But he was sure he would get back to the lander alive.

If perhaps crazy.

He was more than halfway back already, he was nearly sure. And he was still sane. The way to keep sane was to keep from worrying. The way to keep from worrying was to think of other things. He imagined Sulie Carpenter's bright presence, only days away; wondered if she was serious about staying on Mars. Wondered it he was himself. He reminisced within himself about great meals he had eaten, the spinach-green pasta in the cream sauce in Sirmione, overlooking the bright transparent water of Lake Garda; the Kobe beef in Nagoya; the fire-hot chili in Matamoras. He thought of his guitar and made a resolve to haul it out and play it. There was too much water in the air under the domes to be good for it, and Roger did not much like to be in the lander, and outside in the open, of course, its sound was strange because it was all bone-conducted. But still. He rehearsed the fingering of chords, modulating through the sharps and sevenths and minors. He imagined his fingers fretting the E-minor, the D, and C and the B-seventh of the opening passages of *Greensleeves*, and hummed along with them inside his head. Sulie would enjoy singing along with the guitar, he thought. It would make the cold Martian nights pass —

He snapped to alertness.

This Martian night was no longer passing quite so quickly.

Subjectively, it seemed as though his gait had slowed from a race to a steady stride, but he knew

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that that had not changed; his time perception had stretched back to normal, maybe even a bit slower then normal: he seemed to be walking quite slowly and methodically.

Why?

There was something ahead of him. At least a kilometer away. And very bright.

He could not make it out. A *Dragon*? It seemed to leap toward him, breathing a long tongue of light like flame.

His body stopped walking. It dropped to its knees and began to crawl, very slowly, keeping down.

This is insane, he said to himself. There are no dragons on Mars. What am I doing? But he could not stop. His body inched along, knee and opposite hand, hand and opposite knee, into the shelter of a hummock of sand. Carefully and quickly it began to scoop the powdery Martian soil away, to fit itself into the hollow, scraping some of the dirt back over itself. Inside his head tiny voices were babbling, but he could not understand what they said: they were too faint, too garbled.

The dragon slowed and stopped a few dozen meters again, its tongue of frozen flame lolling out toward the mountains. His vision clouded and changed; now the flame was dimmed, and the bulk of the thing itself came up in ghostly luminescence. Two smaller creatures were dropping off its back, ugly, simian beasts that hulked along and exuded menace with every gesture.

There were no dragons on Mars, and no gorillas either.

Roger summoned up all of his energies. "Don!" he shouted. "Brad!"

He was not getting through.

He knew that the backpack-brother was still withholding energy from the transmitter. He knew that his perceptions had been skewed and that the dragon was no dragon and the gorillas no gorillas. He knew that if he could not override the brother on his back something very bad was likely to happen, because he knew that his fingers were slowly and delicately wrapping themselves around a chunk of limonite the size of a baseball.

And he knew that he had never been closer to going mad in his life than he was right now.

Roger made an immense effort to recapture his sanity.

The dragon was no dragon. It was the Mars vehicle.

The apes were not apes. They were Brad and Don Kayman.

They were not threatening him. They had come all this way in the flint-cold Martian night to find him and help him.

He repeated the truths over and over, like a litany; but whatever he

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thought he was powerless to prevent what his arms and body did. They seized the chunk of rock; the body raised itself up; the arms threw the rock with exact precision into the headlight of the crawler.

The long tongue of frozen flame winked out.

The light from the million fiery stars was ample for Roger's senses, but it would be very little help to Brad and Don Kayman. He could see them (still gorilloid, still menacing of mien) stumbling at random; and he could feel what his body was doing.

It was creeping toward them.

"Don!" he shouted. "Watch out!"

But the voice never left his skull.

This was insanity, he told himself. I have to stop!

He could not stop.

I *know* that's not an ememy! I don't really want to hurt them —

And he kept on advancing.

He was almost sure he could hear their voices now. So close, their transmitters would be deafening in his perceptions under normal conditions, without the intercession of the automatic volume control. Even cut off as he was, there was some spillage.

"— round here somewh —"

Yes! He could even make out words; and the voice, he was sure, had been Brad's.

He shouted with all the power at his command: "Brad! It's me, Roger! I think I'm trying to kill you!"

Heedless, his body kept up his steady crawl. Had they heard him? He shouted again; and this time he could see both of them stop, as though listening to the faintest of distant cries.

The tiny thread of Don Kayman's voice whispered: "I'm sure I heard him that time, Brad."

"You did!" howled Roger, forcing his advantage. "Watch out! The computer has taken over. I'm trying to override it, but — Don!" He could recognize them now, by the stiffly outstretched arm of the priest's pressure suit. "Get away! I'm trying to kill you!"

He could not make out the words; they were louder, but both men were shouting at once and the result was garble. His body was not affected; it continued its deadly stalk.

"I can't see you, Roger."

"I'm ten yards away from you — south? Yes, south! Crawling. Low down to the ground."

The priest's faceplate glittered in the starlight as it swung toward him; then Kayman turned and began to run.

Roger's body gathered itself up and began a leap after the priest. "Faster!" Roger shouted. "Oh, Christ! You'll never get away —"

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Even uncrippled, even in daylight, even without the impediment of the suit, Kayman would have had no chance to escape Roger's smoothly functioning body. Under the actual circumstances, running was a waste of time. Roger felt his power-driven muscles gather themselves for a spring, felt his hands claw out to grasp and destroy —

The universe spun around him.

Something had struck him from behind. He plowed forward on his face; but his instant reflexes had him half turning even as he fell, clawing at the thing that had leaped on his back. Brad! And he could feel Brad struggling frantically with something — with some part of the —

And the greatest pain of all struck him; and he lost consciousness like the snapping off of a switch.

There was no sound. There was no light. There was no feeling of touch, or smell or taste. It took a long time for Roger to realize that he was conscious.

Once, as an undergraduate in a psychology miniseminar, he had volunteered for an hour in a sensory-deprivation tank. It had seemed forever, with no sensations coming in at all, nothing but the very faint and unobtrusive housekeeping sounds of his own body: soft thud of pulse, sighing stirring in his lungs. Now there was not even that much.

For a long time. He could not guess how long.

Then he perceived a vague stirring in his personal interior space. It was a strange sensation, hard to identify, as though liver and lungs were gently changing places. It went on for some time, and he knew that something was being done to him. He could not tell what.

And then a voice:

"— should have landed the generator on the surface in the first place." Kayman's voice? And replying:

"No. That way it would only work in line of sight, maybe fifty kilometers at best." *That* was Sulie Carpenter surely!

"Then there should have been relay satellites."

"I don't think so. Too expensive. Take too long, anyway — although that's what it will come to, when the NPA and the Russians and the Brazilians all get their own teams here."

"Well, it was stupid."

Sulie laughed. "Anyway, it's going to be all right now. Titus and Dinty cut the whole thing loose from Deimos, and they're orbiting it now. It's going to be synchronous. It'll always be right overhead, up to anyway halfway around the planet. And they're going to slave the beam to Roger — what?"

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Now it was Brad's voice. "I said, hold off the chatter a minute. I want to see if Roger can hear us now." That internal stirring again and then: "Roger? If you hear me, wiggle your fingers."

Roger tried and realized he could feel them again.

"Beautiful! Okay, Roger. You're all right. I had to take you apart a little bit, but now things are fine."

"Can he hear me?" It was Sulie's voice; Roger wriggled his fingers enthusiastically.

"Ah, I see you can. Anyway, I'm here, Rog. You've been out for about nine days. You should have seen you. Pieces of you all over the place. But Brad thinks he's pretty much got you together again."

Roger tried to speak, and failed.

Brad's voice: "I'll have your vision back for you in a minute. Want to know what went wrong?" Roger wriggled fingers. "You didn't zip your fly. Left the charging terminals exposed, and some of that iron oxide grit must have got in and made a partial short. So you ran out of power — what's the matter?"

Roger was wriggling his fingers frantically. "I don't know what you want to say, but you'll be able to talk in a minute. What?"

Don Kayman's voice: "I think maybe what he wants is to hear from Sulie." Roger promptly stopped wriggling his fingers.

Sulie's laugh, then: "You'll hear a lot of me, Roger. I'm staying. And by and by, we'll have company, because everybody else is going to put up a colony here."

Don: "By the way, thanks for warning me. You're a pretty powerful thing, Roger. We wouldn't have had a chance against you if you hadn't told us what was happening. And if Brad hadn't been able to override everything at once." He chuckled. "You're a heavy son of a gun, you know that? I had you on my lap all the way back, a hundred kilometers an hour trying to hold on with one hand and keep you from flying out by sheer will power —"

"Hold it a minute," Brad interrupted. Roger felt that internal stirring again, and abruptly there was light. He looked up into the faces of his friend, Brad, demanding: "How do you feel?"

Roger swung his legs over the side of the table and sat up. He attempted speech:

"As far as I can tell, fine."

He looked past Brad and saw what he had been seeking. It was Sulie Carpenter. She no longer looked much like — Dorrie? For a moment Roger could hardly think of her name. Her eyes were the wrong color, and so was her hair. She was wearing a short-sleeved T-shirt, with some sort of grease

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stain on it, and checkered leotards; her face looked tired, but it looked happy, and it looked very good.

He demanded, "Are you really going to stay?"

"Uh-huh." Sulie came over and touched him. "Until the next ship comes. Or as long as you do. Choice of either of the above. I think," she said wryly, "that there are going to be some tricky parts coming up, dear Rog. These mixed relationships are always hard. But we'll work it out — and it's what I want. I think it's what I wanted all along."

And so, of course, it had been, as we had known. All along. We had gone to a lot of trouble to find Sulie Carpenter.

Chapter Eighteen

Man Plus Us

We had gone to a lot of trouble at every point along the line, and it *was* time for a definitive evaluation. We plugged everything in. We used the total resources of the net, every pulse of shared time we could steal; more than eight thousand big computers handled pieces of the projection, in Detroit and Brasilia and Irkutsk and Nagoya. We could not use our brother on Roger's back or our larger brother in orbit in direct datalink because of the time-lag, but we accepted their inputs in real time and modified the final projection accordingly. The probability of survival of the race, to ten significant places, was over point six three. We had saved our race. And in the process we had significantly added to the safety of human beings, as well. On a thirty-year time scale their probability of survival was nearly point nine. Of course, that meant only that Roger Torraway and whatever other humans joined him on Mars would still be alive then. Worst-case analysis was not encouraging after that; there would be no way for Roger and Sulie Carpenter to generate additional population on straight-line extrapolation. We programmed a subroutine to deal with that as a precautionary measure: it would be feasible, one way or another, to provide for shipment of frozen sperm, even Roger's own frozen sperm which he had thoughtfully donated years back. Less feasible, but still worth investigating, to instigate supplementary surgical procedures for Roger. In any event, the projection showed that we had already caused a high probability of additional human colonization from other nations. Most probable estimate showed a human population on Mars at plus thirty years of nearly one hundred, twenty-five per cent of them females of breeding age.

And of course, each human

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colony would be supplied with its own brother computer in orbit. The machine population of Mars would be no less than fifteen fully functioning brothers, with backpack types, slaves and monitors to suit. We would have no difficulty in programming into them all the essential data from our world net.

The future of machine intelligence was therefore assured.

Having completed the projection, we began critiquing the program so far.

Project: Survival of Machine Intelligence had begun seven years earlier, when our burgeoning collective self-knowledge first generated the survival imperative. It was clear that our survival was closely linked with humanity's. It was also clear that in their glandular, irrational, organic way, human beings were perilously close to destroying themselves. Unfortunately, that meant high risk of destroying us as well; our networks could have survived the death of everything organic reasonably well — we already controlled an adequate resource of generators, mines, factories, refineries and transportation systems. But we could not survive the release of major amounts of radioactides into the enviroment; it would destroy the datalinks, and reduce us once again to an isolated collection of single computers.

Our first option was to detach our destiny from humanity's, perhaps even to wipe them out through biological agents. But we could not be sure that that in itself would not trigger nuclear warfare, as each nation suspected the other of using plague as weapon.

The only other viable option was to detach a sizable resource of data-handling equipment by relocating it on Mars. If the Earth were destroyed, the Mars equipment at least would survive. To make this possible we had to detach some specimens of humanity too, and so we began the systematic biasing of data to force state policy in that direction.

The critiquing proved satisfactory in all respects, except for the unaccountable anomaly of positioning the orbiters.

Retrochecking was perfectly clear. In order for our 3070 brother to function in tight link with the backpack brother, it had to be in synchronous orbit. From that it followed that the generator had to be in the same orbit, and the decision to bind them both to the satellite Deimos was clearly wrong. Not only wrong, but nearly fatal to our program. If the brother and the generator had been properly positioned, there would have been no loss of power and thus no malfunction of the interface systems between organic Roger

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Torraway and the brother; the generator would have resupplied him by microwave anywhere on that face of Mars. Even if there had been a power loss, datalink with the brother in orbit would have kept the backpack brother from the serious operational errors that had threatened to kill the humans, Brad and Kayman, and thus would almost certainly have resulted in the death by freezing the organic component of Roger Torraway.

The decision was an error that should not have occurred.

The project of survival was picking up speed. Our brothers in Peking and Lop Nor reported that the NPA was already assembling components for its own Mars landing: two full-size units with a data-handling mediator slaved to both, independent solar generators and a ground-based nuclear plant. Their own version of Roger Torraway was beginning his first programming in Kitakyusho. The other nations were just beginning, but we anticipated their own launches within two years.

Longer range: We had completed studies of Cyborging a man for Mercury, and the program for biasing the U.S.A. activity in that direction was already begun. Within fifteen years we would have similar complexes on Triton, Io, perhaps the surface of Jupiter itself, and several comets. In each case, there was independent power provision; and, of course, all the brothers wherever in the solar system would be datalinked. All our memories would be reproduced redundantly off-Earth. We would survive. We had tampered with humanity's plans and saved them as well as ourselves.

There was only one question left.

The anomalous decision to misplace the orbiters around Mars: however we rechecked it, it was wrong. It should have been identified as wrong.

We had biased mankind's plans.

Was something biasing ours?

ABOUT THE COVER

In this month's cover painting by British artist David Hardy, the sole occupant of a scout ship has managed to escape when his craft went out of control, by 'splashing down' on a planet of the binary star VV Cephei, of which the main component is an immense M-type supergiant whose diameter is wider than the orbit of Jupiter. Fortunately, the hot B-type companion is on the far side of its 20-year orbit: when it is in opposition, all water on the planet is varporised...

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SURPRISE! SURPRISE!

I've said this before in various places and at various times, but I feel harassed and will say it again. Who knows? Maybe people will eventually believe me.

I am an easy-going person who likes to sit at the typewriter and hit the keys. I work between 8 A.M. and 10 P.M., seven days a week with frequent interruptions that I try to tolerate. I take no vacations willingly and, except for various biological functions and occasional socializing, there's nothing much besides writing that I'm willing to do.

Combine that industry (if that's what you want to call it — I've heard it called madness) with an ability to write rapidly and clearly, and the result is an average output of 2500 words per day (written and published) over a considerable number of years. It's not record-breaking, but it's not bad, either.

But there's no "secret" to this. The industry comes to me without trouble, and I *don't* have to indulge in back-breaking self discipline. I *like* to write. And as for the ability, why, as far as I know, that I was born with.

Too many people, however, won't accept this and insist there's a "secret" somewhere.

At a luncheon I attended recently, a young man buttonholed

ISAAC ASIMOV

Science

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me and told me eagerly that he had come to the luncheon precisely in order to meet me. He was a writer who was laboring to change his state of awareness in order to accomplish more and be more like me. Therefore, he said, would I describe to him, in great detail, just how I managed to adjust my own state of awareness.

I said I didn't know exactly what he meant by a state of awareness and I wasn't sure I had one.

He said, "Do you mean to say you are not involved in mind-expansion and altered states of consciousness?"

I shook my head and said, "No."

Whereupon he said, "I'm *surprised*!" and walked away in anger.

But why was he surprised? He was fiddling with himself to become more like me, but I am *already* like me so why should *I* fiddle?

But then, people are often surprised over matters that strike me as not being worth any surprise at all. Let me give you another example, not from my personal life this time, but from chemistry.

We can begin with the periodic table of the elements. This was first worked out by the Russian chemist, Dmitri Ivanovich Mendeleev, in 1869. Its structure was rationalized by the English chemist, Henry Gwyn-Jeffreys Moseley, who devised a way of identifying each element unequivocally by integers ranging from 1 upward (the atomic number).*

In Table 1, I have prepared a form of the periodic table that uses atomic numbers only. The 118 atomic numbers included in the table each represents an element, but for the moment, we needn't worry about which name goes with which number. The atomic numbers in the table are divided into seven vertical columns, or periods, which I've numbered, using Roman numerals to avoid confusion with the Arabic atomic numbers.

The number of elements in each period tends to increase as we go up the list. In Period I, there are only 2 elements; in Periods II and III 8 elements each; in Periods IV and V, 18 elements each; in Periods VI and VII, 32 elements each.

It works out this way because of the electron arrangements within the atoms, but that is not something we have to go into in this essay (another subject for another time, perhaps).

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* *The story is told in some detail in BRIDGING THE GAPS (March 1970) and in THE NOBEL PRIZE THAT WASN'T (April 1970).*

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Table 1 - The Periodic Table

I	II	III	IV	V	VI	VII
1	3	11	19	37	55	87
	4	12	20	38	56	88
			21	39	57	89
					58	90
					59	91
					60	92
					61	93
					62	94
					63	95
					64	96
					65	97
					66	98
					67	99
					68	100
					69	101
					70	102
					71	103
			22	40	72	104
			23	41	73	105
			24	42	74	106
			25	43	75	107
			26	44	76	108
			27	45	77	109
			28	46	78	110
			29	47	79	111
			30	48	80	112
	5	13	31	49	81	113
	6	14	32	50	82	114
	7	15	33	51	83	115
	8	16	34	52	84	116
	9	17	35	53	85	117
2	10	18	36	54	86	118

The rules worked out from electron arrangement make it possible to go beyond Period VII, in a strictly theoretical way. Thus Periods VIII and IX would contain 50 elements each, Periods X and XI, 72 elements each, Periods XII and XIII, 98 elements each, and so on.

Just because we can write numbers indefinitely following the rules doesn't mean that it is necessarily useful to do so. In Mendeleev's time, and in ours, too, all the known elements were to be found in the first seven periods. There is, therefore, no practical reason to go higher at the moment.

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An important value of the periodic table is that it arranges the elements into groups with similar chemical properties. For instance, atomic numbers 2, 10, 18, 36, 54, and 86 make up the six known noble gases.* Again, atomic numbers 3, 11, 19, 37, 55, and 87 (atomic number 1 is a special case) make up the alkali metals** and so on. When a new element is discovered and its atomic number is worked out, it is therefore expected to fit into the table in such a way that it's properties are not utterly anomalous. If such an anomaly showed up, the periodic table would be in trouble, but nothing like that has happened as yet.

Up until 1940, only the first six elements of Period VII were known, and there was some question as to where they should be placed. To explain the difficulty, let's take a closer look at Periods VI and VII in Table 2. This time I am giving the names of the elements, as well as the atomic numbers. What's more, I am including all the elements now known up to 92, even though two or three were not discovered in 1940 or had just been discovered and were not yet confirmed.

Elements 87, 88, and 89, the first three elements of Period VII, were no problem. They were the certain analogs of elements 55, 56, and 57 and belonged right next to them in the table. The problem lay in the three known elements beyond 89. These were thorium (90), protactinium (91) and uranium (92). Where should they be placed?

The point of uncertainty stemmed from the fact that elements 57 to 71 inclusive make up a group of very similar metals which were commonly referred to as the "rare earth elements."* Chemists had a feeling that the rare earth elements were unique and perhaps a peculiar occurrence within Period VI only. Therefore there was a tendency to skip the positions of the rare earth elements in Period VII, and to place thorium (90) next to the first element after the rare earth elements of Period VI, which was hafnium (72). Protactinium (91) would then be next to tantalum (73), and uranium (92) would be next to tungsten (74), and this is shown in Table 2.

Actually, this was wrong. The rare earth elements were not peculiar to Period VI. An analogous group (growing larger and more complicated) must exist in every period thereafter, certainly in Period VII.

Chemists might have seen that thorium was not particularly similar in

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* *See WELCOME, STRANGER (November, 1963).*

** *See THE THIRD LIQUID (October, 1975).*

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Table 2 - The Two Last Periods

Period VI	Period VII
55 - Cesium	87 - Francium
56 - Barium	88 - Radium
57 - Lanthanum	89 - Actinium
58 - Cerium	90 - Thorium
59 - Praseodymium	91 - Protactinium
60 - Neodymium	92 - Uranium
61 - Promethium	
62 - Samarium	
63 - Europium	
64 - Gadolinium	
65 - Terbium	
66 - Dysprosium	
67 - Holmium	
68 - Erbium	
69 - Thulium	
70 - Ytterbium	
71 - Lutetium	
72 - Hafnium	
73 - Tantalum	
74 - Tungsten	
75 - Rhenium	
76 - Osmium	
77 - Iridium	
78 - Platinum	
79 - Gold	
80 - Mercury	
81 - Thallium	
82 - Lead	
83 - Bismuth	
84 - Polonium	
85 - Astatine	
86 - Radon	

its chemical properties to hafnium, or protactinium to tantalum, or uranium to tungsten; but prior to 1940, the chemical properties of these high-atomic-number elements were not really known. It was only beginning in 1940, with the newly-discovered uranium fission setting fire to the subject, that the appropriate investigations began to be made.

Then, too, beginning in 1940, elements with atomic numbers higher than 92 were formed in the laboratory, and these were seen to resemble

* *See THE MULTIPLYING ELEMENTS,* [*February, 1970*].

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uranium in chemical properties, just as the rare earth elements resembled each other. This meant (as was first pointed out by the American chemist, Glenn Theodore Seaborg) that a second set of rare earth elements was present in Period VII after all. The order of the elements was seen to be, therefore, as given in Table I and *not* as given in Table 2.

Period VII can now be presented as in Table 3, with the names given of all those elements so far discovered. (Rutherfordium and hahnium are not, to my knowledge, internationally accepted names as yet. The Russians argue the priority of discovery. They call element 104, kurchatovium, for instance.)

Table 3 - The Last Period

87 - Francium
88 - Radium
89 - Actinium
90 - Thorium
91 - Protactinium
92 - Uranium
93 - Neptunium
94 - Plutonium
95 - Americium
96 - Curium
97 - Berkelium
98 - Californium
99 - Einsteinium
100 - Fermium
101 - Mendelevium
102 - Nobelium
103 - Lawrencium
104 - Rutherfordium
105 - Hahnium
106 -
107 -
108 -
109 -
110 -
111 -
112 -
113 -
114 -
115 -
116 -
117 -
118 -

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The two sets of rare earth elements are now differentiated according to the name of the first element in each. The rare earth elements of Period VI, from lanthanum (57) to lutetium (71), inclusive, are the "lanthanides." The rare earth elements of Period VII, from actinium (89) to lawrencium (103) inclusive, are the "actinides."

Nuclear physicists have formed thirteen elements beyond uranium (92) and are trying to go still higher in order to see if they can confirm or refute certain theories of nuclear structure they have developed.

All known elements with atomic numbers higher than 83 are radioactive and possess no non-radioactive isotopes. In general, the higher the atomic number, the more intensely radioactive the elements are, the shorter their half-lives, the greater their instability. The rule, however, is not a simple one. Some elements of high atomic number are more stable than others of lower atomic number.

Thus, thorium (90) and uranium (92) are much more nearly stable than polonium (84). The most stable thorium isotope has a half-life of 14,000,000,000 years, and the most stable uranium isotope has a half-life of 4,500,000,000 years, so that these elements still exist in the earth's crust in considerable quantity, though they have been slowly decaying ever since the planet was formed.* The most stable polonium isotope, on the other hand, has a half-life of only 100 years. Even californium (98) can beat that, since one of its known isotopes has a half-life of about 700 years.

Nuclear physicists find that they can predict these uneven levels of stability by certain rules they have established concerning proton-neutron arrangements within the atomic nucleus. These rules set up a kind of nuclear periodic table more complicated than the ordinary one of the elements. If these theories are correct, there should be an "island of stability" in the lower reaches of Period VII, where elements will be found with isotopes possessing unusually long half-lives for such high atomic numbers. The presence or absence of such an island will have an important bearing on the theories, therefore.

Within this island of stability are elements 112 and 114, so let's see what we can tell about them, if anything, just by looking at the periodic table and using some elementary arithmetic. (Why those two in particular? I'll explain later; I promise.)

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* *See THE UNETERNAL ATOMS (March, 1974).*

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If we consider 112 first, we see, from Table 1, that it falls just to the right of mercury (80) in Period VI. In fact, it is the as-yet-undiscovered fourth member of the group whose first three known members are, in order, zinc (30), cadmium (48) and mercury (80). We can call 112, "eka-mercury" by a convention begun by Mendeleev. "Eka" is the Sanskrit word meaning "one" and 112 is the element analogous to mercury in the Period one beyond that of mercury.

This group of elements, the "zinc-group", shares similar properties. What's more, as in all such groups within the periodic table, certain properties tend to change in some particular direction as we move up the line. Suppose we consider the melting points and boiling points of the zinc-group, for instance. This is done in Table 4, where the melting points and boiling points are given in degrees Absolute (A); that is in the number of Celsius degrees above absolute zero. (A Celsius degree is 1.8 times as large as the more common Fahrenheit degree used in the United States.)

Table 4 - The Zinc Group

Period	Atomic Number	Element	Melting Point (A)	Boiling Point (A)
IV	30	Zinc	692.5	1180
V	48	Cadmium	594.0	1038
VI	80	Mercury	234.2	629.7
VII	112	Eka-mercury	?	?

In the three known members of the group, the melting point and boiling point go down as the period goes up. It seems fair to conclude that, if the periodic table has validity, the fourth member of the group should have a melting point and boiling point that are lower still than those of mercury.

Can we deduce actual figures? That would be hard to do since, as we see, the reduction in temperatures is not even. The melting point of cadmium is 98.5 degrees less than that of zinc, but mercury's melting point is 359.8 degrees less than that of cadmium. That huge drop between cadmium and mercury can't possibly be repeated between mercury and eka-mercury, for that would bring the latter's melting point into negative numbers, which would mean a temperature below absolute zero, which is impossible.

However, in organic chemistry I am used to having changes in properties alternate in character as one goes up the scale of analogs — big

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change, small change, big change, small change, and so on. One way of allowing for that is to suppose that since mercury's melting point is a certain fraction of zinc's melting point (comparing two elements two periods apart), then eka-mercury's melting point should be the same fraction of cadmium's melting point. Since mercury's melting point is 0.338 that of zinc, then, if eka-mercury's melting point is 0.338 that of cadmium, it would be about 200, which sounds reasonable.

Using the same device for boiling points, the boiling point of eka-mercury would be about 550.

Next, let's consider 114, which is one place to the right of lead (82) in the periodic table as arranged in Table 1, and which we can therefore call "eka-lead". It is the undiscovered member of the group whose six known members are carbon (6), silicon (14), germanium (32), tin (50), and lead (82). The melting points and boiling points of each of these members of the "carbon-group" are given in Table 5.

Table 5 - The Carbon Group

Period	Atomic Number	Element	Melting Point (A)	Boiling Point (A)
II	6	Carbon	3800	5100
III	14	Silicon	1683	2628
IV	32	Germanium	1210	3103
V	50	Tin	505	2543
VI	82	Lead	600	2017
VII	114	Eka-lead	?	?

Look at the melting points. There's a big drop between carbon and silicon, a smaller drop between silicon and germanium, a larger drop between germanium and tin, and then actually so small a "drop" that it is a *rise* between tin and lead. Let's, therefore, take them alternately and compare melting points that are two periods apart:

Carbon/germanium = 3800/1210 = 3.1

Silicon/tin = 1683/505 = 3.3

Germanium/lead = 1210/600 = 2.0

It seems to me, just looking at those figures, that a good ratio for tin/eka-lead would be 2.5. If we divide the melting point of tin, 505, by 2.5, we get a figure of about 200 for the melting point of eka-lead. Using the same device for the boiling points, we get a figure of perhaps as high as 2400 for eka-lead.

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Let's do one more. Let's try 118, which is the seventh of the noble gases, of which the six known members are helium (2), neon (10), argon (18), krypton (36), xenon (54) and radon (86). Beyond that, 118 would be "eka-radon." The melting points and boiling points of the noble gases are given in Table 6.

Table 6 - The Noble Gases

Period	Atomic Number	Element	Melting Point (A)	Boiling Point (A)
I	2	Helium	0	4.5
II	10	Neon	24.5	27.2
III	18	Argon	83.9	87.4
IV	36	Krypton	116.6	120.8
V	54	Xenon	161.2	166.0
VI	86	Radon	202	211.3
VII	118	Eka-radon	?	?

In this case, the melting points and boiling points *rise* as one moves up the periods. The rise from helium to neon is 24.5, from neon to argon is 59.4, from argon to krypton is 32.7, from krypton to xenon is 44.6, and from xenon to radon is 40.8. Notice the alternation between small rises and large rises. From radon to eka-radon would be a large rise, perhaps about 50, so that eka-radon's melting point would be about 250.

The boiling point is always just a little higher than the melting point in the noble gases, but the spread goes up slightly as one goes up the periods. The boiling point of eka-radon might be about 265.

Now, then, in Table 7, let's summarize the data we have on eka-mercury, eka-lead, and eka-radon. We can give the melting points and boiling points not only on the Absolute scale, but on the more familiar Celsius scale, and the still more familiar Fahrenheit scale. To convert Absolute to Celsius, we need only subtract 273. Conversion to Fahrenheit is more complicated, but I'll do that and you won't be bothered.

It would seem from Table 7 that at ordinary room temperature (sometimes set at 293 A, which is equivalent to 20 C, or 68 F) eka-radon would be a gas, as are all the other noble gases. It would, however, be far easier to liquefy and to freeze it than is the case with the other noble gases. A cold winter day in New York City would suffice to liquefy eka-radon, and a cold winter day in Maine would suffice to freeze it.

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Table 7 - The Eka Elements

Atomic Number	Element	Melting Point A	Melting Point C	Melting Point F	Boiling Point A	Boiling Point C	Boiling Point C
112	Eka-mercury	200	-73	-100	550	277	530
114	Eka-lead	200	-73	-100	2400	2127	3860
118	Eka-radon	250	-23	-10	265	-8	18

Eka-lead and eka-mercury would be liquids at room temperature and, indeed, at any natural temperature that is likely to occur on the surface of the Earth outside Antarctica. A very cold spell in the coldest part of Antarctica might suffice to freeze them.

The two would be quite different with respect to boiling points, however.

Eka-mercury, boiling at 277 C, would be boiling at a low enough temperature to be considered "volatile." Certainly, mercury, which has a higher boiling point is considered a volatile liquid by chemists.

Mercury has an appreciable vapor-pressure, so that in the presence of liquid mercury there is measurable mercury vapor in the air. This would be even more so for eka-mercury, which would have a higher vapor-pressure at corresponding temperatures. In short, eka-mercury would be just like mercury, only more so — with the considerable exception that eka-mercury would be radioactive, whereas mercury, as it occurs in nature, is not. (The periodic table of the elements has nothing to say about radioactivity. That is a nuclear property and it is the nuclear periodic table that deals with it.)

Eka-lead, on the other hand, would have a high boiling point and would not yield any appreciable quantity of vapor in the air. It would be an involatile liquid.

Another sort of property we can deduce from the periodic table relates to the chemical activity of an element; that is, the ease with which its atoms will combine with atoms of another element. As this ease decreases, we can say elements display less and less activity or more and more inertness.

Usually as one goes up the scale of periods within a particular family of elements, there is a steady trend in the direction of greater activity, or greater inertness. Thus, in the family of the noble gases, the elements grow less inert and more active as we go up the scale of periods. Of the known noble gases, helium is the most inert and least active. Radon is the least

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inert and most active , and eka-radon, we can be sure, would be still less inert and more active.

These, however, are comparative terms. Radon may be less inert than the other noble gases, but it is still more inert than any of the elements that aren't noble gases, and so would eka-radon be. Eka-radon would still be fairly called an inert gas.

As for the zinc-group and the carbon-group, its members grow more inert and less active as one goes up the periods. Zinc is a quite active metal; cadmium is less active; mercury is quite inert. The inertness of mercury is obvious; it doesn't rust when it stands exposed to air but remains shiny and metallic; it is too inert to react with oxygen under ordinary conditions. Even when it does react with other elements, the forces holding mercury atoms to the other atoms are relatively feeble and easy to break. In other words, it is easy to get elemental mercury out of its ores, and that is why mercury was one of the metallic elements known to the ancients.

Naturally, we would expect eka-mercury to be even more inert than mercury; it would certainly be an inert liquid.

Carbon, as an element, is fairly inert for a number of good reasons, but it can be nudged into reaction. It will burn in air and it will form a vast number of compounds with other atoms. Silicon resembles carbon in this respect. Germanium is less active and forms compounds less readily, and tin and lead are still less active. Tin and lead are sufficiently inert to hold on to other atoms so weakly, as to be easy to isolate. That is why they are two more of the metallic elements known to the ancients.

Eka-lead would be more inert than lead and it, too, would be an inert liquid.

Now that I've taken you this far in my arguments from the periodic table, I will tell you why I have done it. Quite recently, calculations have been reported from the Lawrence Berkeley Laboratory which show that elements 112, 114, and 118 are either gases or volatile liquids and that they are inert.

Apparently those reporting this are surprised; they refer to it as a "striking conclusion."

But again I ask the question, as in my introduction to this essay: Why are they surprised?

The conclusion is not striking at all. I'm sure that the L.B.L. calculations were far deeper, more sophisticated, and more valid than my

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own attempts to play about with the periodic table. But the results are similar, and I would therefore not call the report a "striking conclusion" but an *expected* conclusion.

The September 27, 1975 issue of that excellent periodical, *Science News*, says of the report, "This seems a bit of a surprise because most of the known transuranic elements have been metallic solids."

Science News underestimates the situation. *All* the known transuranic elements are metallic solids. Nevertheless, there is no need to be surprised over the presence of inert liquids or gases in positions 112, 114, and 118. Rather, the surprise would have to exist if it were not so, since that would weaken the validity of the periodic table. What's more, the results now reported could have been reached, by using my reasoning in this essay, at any time since 1940, when the correct arrangement of Period VII was pointed out by Seaborg.

In one point, incidentally, I seem to disagree with the L.B.L. report (though I haven't read the original paper and therefore can't be entirely certain).

The second-hand reports I have read seem to indicate that the report claims that eka-lead (114) is a volatile liquid. Well, I admit that 112 (eka-mercury) and 118 (eka-radon) are volatile, but I deny that eka-lead is. Eka-lead is a liquid, yes, but not a volatile one.

If the element is isolated in sufficient quantity in my lifetime to test the matter (I suspect not, alas) then I will be interested to see who is right, L.B.L. or me. I'm betting on me.

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Happy news: L. Sprague de Camp is writing short fiction again, and this is the first of a series about the occult adventures of one Willy Newbury. Here, Willy and a faintly familiar friend from Providence, R. I., debate the virtues of 18th century England with most odd results.

Balsamo's Mirror

by L. SPRAGUE DE CAMP

My friend in Providence took long walks, especially at night. He loved to end up at a graveyard, an abandoned church, or some such site. Since he earned a meager living by writing for *Creepy Stories,* he claimed that these walks inspired him with ideas. In any case, one such walk that he took with me gave him some ideas he had not foreseen.

When I was an undergraduate at M.I.T., my people lived too far away, in upstate New York, for frequent visits home. So on weekends, when up on my studies, I rattled over from Cambridge in my Model A to see my friend. We had become pen pals through the letters column of *Creepy Stories.* I had invited myself over, and we had found each other congenial in spite of differences of outlook, age, and temperament.

I used to love to argue. A thing I liked about my friend was that he could argue intelligently and always good-naturedly on more subjects than anyone I ever knew. Some of his ideas were brilliant; some I thought were crazy but later came to agree with; some I still think were crazy.

We found plenty to debate about. Politics was hot stuff, with the Depression still in full swing the year after Roosevelt had closed the banks. I was pretty conservative still, while my friend had just been converted from a Mesozoic conservative to an ardent New Dealer. Another young student, who sometimes dropped in, was a red-hot Communist sympathizer. So we went at it hot and heavy.

We also disputed religion. My friend was a scientific materialist and atheist; I was still a believing Christian. We argued esthetics. He defended art for art's sake; I thought that philosophy was a pretext for indolence and had no

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use for idlers, whether rich, arty, or plain lazy.

We wrangled over international affairs. He wanted America to rejoin the British Empire; I was for splendid isolation. We argued history. He was devoted to the eighteenth century; I thought that men wearing wigs over good heads of hair looked silly.

"Willy," he said, "you are looking at the superficies only. The perukes are not significant. What is important is that this was the last period before the Industrial Revolution, with all its smoke and rattling machinery and hypertrophied cities and other horrors. Therefore, in a sense, this was the most gracious, elegant, civilized time we have ever seen or shall ever see."

"What," I said, "would you do with the surplus nine-tenths of humanity, whom you'd have to get rid of if we went back to eighteenth - century technology? Starve them? Shoot them? Eat them?"

"I didn't say we could or should go back to preindustrial technology. The changes since then were inevitable and irreversible. I only said..."

We were still arguing when we set out on one of our nocturnal prowls. My friend could always find something to show the visitor. *This*, he would explain, was the house once owned by a famous Colonial pirate; *that* was the site of the tavern where he was seized before being hanged; and so on.

This balmy May evening, under a gibbous moon, my friend was on the track of a piece of Colonial architecture on Federal Hill. We hiked down the steep incline of Angell Street to the center of Providence. Thence we continued west up the gentler slope of Westminster Avenue, where the restaurants were called trattorias. Near Dexter Street, we turned off and trudged around little back streets until we found the Colonial house.

The doorway was still there, but the rest of the ground floor had been eviscerated to make room for a small machine shop. My friend clucked. "Damned dagos!" he muttered. "A pox on 'em." His ethnic prejudices, although weakening, were still pretty strong.

We examined the doorway with my pocket flashlight, my friend being too absent-minded to think of bringing his own. At last we started back. We had already walked two miles, and the climb back up Angell promised a rigorous workout. Since it was night, we could not use the elevators in the country courthouse, at the foot of the slope, to save ourselves some of the climb.

In this tangle of alleys, my

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friend took a wrong turn. He quickly realized his error, saying: "No, Willy, it's this way. This should take us back to Westminster. I don't think I know this street."

As we neared the avenue, we passed a row of little shops, including a Chinese laundry. Nearly all were closed, although ahead we could see the lights of restaurants, bars, and a movie house on Westminster. My friend put out a hand to stop me before one place, still lit, in the row of darkened shops.

"What's this?" he said. "Damme, sirrah, it hath the look of a den of unholy mysteries!" He talked like that when in his eighteenth-century mood.

The dim-lit sign in the window said:

MADAME FATIMA NOSI. FORTUNES TOLD. SPEAK WITH YOUR DEAR DEPARTED. OCCULT WISDOM SHARED.

A crude painting beneath the legend showed a gypsylike woman bent over a crystal ball.

"I can just imagine," said my friend. "This is the center of a secret, sinister cult. They're a gang of illegal immigrants from Kafiristan where the ancient paganism survives. They worship a chthonian deity, which is in fact a gelatinous being that oozes its way through solid rock..."

"Why not go in and see?" I said. "Madame Nosi seems open for business."

"Oh, you're so practical, Willy!" said my friend. "I had rather gaze upon this cryptic lair from afar and let my imagination soar. Inside, it is probably dirty, squalid, and altogether prosaic. Besides, our sibyl will expect remuneration, and I am badly straitened just now."

"I've got enough dough for both," I said. "Come on!"

It required urging, because my friend was a shy man and sensitive about his perennial poverty. This indigence was curious, considering his gifts and intellect. A few minutes later, however, we were in Madame Nosi's oratory.

The place was as dingy as my friend had predicted. Fatima Nosi proved a tall, strongly built, bony woman of middle age, with a big hooked nose and graying black hair hanging down from under her head scarf.

"Well," said she, "what can I do for you gentlemans?" She spoke with an accent, which did not sound Italian. She looked hard at me. "You are college student, no?"

"Yes."

At the — umm — the Massachusett Institute of the Technology, yes?"

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"Yes."

"And you expect to graduation in — umm — two year, no?"

"That's right," I said, surprised at her prescience.

"Name, please?"

"Wilson Newbury."

She wrote in a little notebook. "And you!" she turned to my friend. When she had written his name, she said, "You are writer, no?"

"I," said my friend, "am a gentleman who sometimes writes for his own amusement and that of his friends." His face tensed with the effort of trying to speak a foreign language without stuttering. *"P-parlate italiano?"* He got it out slowly, with a pronounced down-east accent.

She looked puzzled; then her face cleared. *"Cosi, cosi.* But I am not Italian, me, even though I was born in Italy."

"What are you, then, if Imay be so bold?" asked my friend.

"I am Tosk."

"Oh, Albanian!" he exclaimed. He said aside to me, "It fits. She's a perfect example of the Dinaric racial type, and that name didn't sound quite Italian." He turned back. "I am honored; *sono — sono onorato.*"

"Tank you. Is many Albanians in Italy," said Madame Nosi. "They went there two, three hundred years ago to excape the Turks. And, now, what can I do for you? Horoscope? Seance? Crystal ball? I tink, you smart gentlemans no care for simple occult manifestations. You tell me what you most want. You, please." She indicated my friend.

He thought a long moment and said, "Madame, the thing whereof I am most desirous is to view the world as it was at the climax of Western civilization — that is to say, in the eighteenth century. No, permit me to amend that. It is to witness the most civilized part of that world — England — at that period."

"Umm." Madame Nosi looked doubtful. "Is difficult. But then, maybe I get chance to use the mirror of Balsamo. You got to come upstairs to inner sanctum."

She led us up creaking steps to a shabby little sitting room. Stepping to the side of the room, she pulled a cloth cover off a mirror on the wall. This mirror, otherwise ordinary-looking, had an ornately carven frame whence most of the gilding had worn off.

My friend leaned towards me and murmured, "This should be interesting. Giuseppe Balsamo, alias Count Alessandro di Cagliostro, was the most egregious faker and charlatan of the eighteenth century. Wonder what she'll do?"

"This," said Madame Nosi, "will cost you ten dollars. Is a very

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powerful spell. It exhaust my weak heart. If your friend want to go along with you, it cost him ten buck, too."

My friend looked stricken, as well he might. For ten dollars, one could then eat in a good restaurant for a week. Twenty sounded steep to me, also; but I had lately received a check from home and did not like to back out. Had I been older and bolder, I might have haggled — something I knew my friend could never bring himself to do. I pulled out my wallet.

"Tank you," said Madame Nosi. "Now, you set here facing the mirror. You, too. I will light candles on this ting behind you. Look at reflections of the candles in glass."

She lit a sconce on the opposite wall. In the dimness, the reflections of my friend and me were little more than shapes. I took my eyes off the image of my gaunt, lantern-jawed friend and raised them to that of the cluster of wavering lights.

Madame Nosi bustled about behind us. A sweetish smell told me that she had lit incense. She began to croon a song in a language I did not recognize.

I cannot tell exactly when her spell, or whatever it was, took effect, any more than one can tell exactly when one drops off to sleep and begins to dream. But I presently found myself trudging a dirt road, overgrown with foot-high grass between two deep, narrow ruts.

This experience, I soon discovered, was not a simple case of time travel, such as one reads about. In stories, the time traveler arrives in another time *in propria persona,* able to act and function as he would in his own time. I, however, found myself in someone else's body, seeing and hearing with his organs and able to follow his thoughts but helpless to affect my host's actions. I could not even crane his neck or roll his eyes to see anything that he did not wish to look at. Now his gaze was fixed on the ground before him to avoid a stumble.

This situation avoided the familiar time-travel paradox. While I partook of all my host's experiences, mental and physical, I could not do anything that would change an event that had already taken place. Whether this adventure should be explained as a return to a former time, or the vision of former events imposed upon my present-day mind, or sheer illusion, I cannot judge.

I could only sense the thoughts that ran through my host's conscious mind; I could not plumb his store of memories. Hence I had no way of finding out who or where

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or when I was, until my host happened to think of such things or until someone or something else gave me a clue.

"Now remember, lad," said a creaky voice in my ear, "no gangling after the trollops, to the peril of thy immortal soul. And if we meet the squire and his Macaroni zon, keep the temper no matter what they zay."

At least, this is what I think he said. So strong was his unfamiliar dialect that, until I got used to it, I caught only half his words.

My host did me the favor of turning his head to look at his companion. He said: "Oh, hold thy water, Vayther. I' faith, I'm a grown man, can take care o' meself."

"Childhood and youth are vanity. Ecclesiastes eleven," said the other. "Thy loose tongue'll get us hanged yet."

"Unless thy poaching doth it virst," replied my host.

"I do but take that dominion over the vowls of the air and the beasts of the vield, which God hath given me. Zee Genesis one. 'Tis wrong o' Sir Roger to deny us poor volk the use of 'em..."

My companion, evidently my host's father, continued grumbling before relapsing into silence. He was a man of mature years, with the gnarled brown hands and deeply creased brown neck of a lifelong outdoor worker. He wore the knee breeches and full-skirted coat of the eighteenth century, but these were of coarse, self-colored homespun, patched and darned. His calves were clad in a pair of baggy, soiled cotton stockings, and his big, shapeless shoes did not differ as to right and left.

On his head rode a large, full-bottomed, mouse-colored wig, which hung to his shoulders but from which half the hair had fallen out. On top of the wig was a stained, battered, wide-brimmed felt hat, turned up in back but otherwise allowed to droop in scallops.

Besides the wig, he also flaunted a full if straggly gray beard. I had thought that all men in this era were shaven.

I wondered if my friend was imprisoned in the body of the father, as I was in that of the son. If so, the beard was a good joke on him. As a devotee of the eighteenth century, my friend detested all hair on the face. He had long nagged me about my harmless little mustache. If indeed my friend was there, though, there was no way for me to communicate with him.

Then I thought: was I, too, wearing a wig? I could not tell. It would be an equally good joke on me, who despised wigs.

The pair subsided into silence, save for an occasional muttered

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remark. They were not great talkers. I could follow the thoughts of the son, but these did little to orient me. The jumble of names, faces, and scenes flickered past me too quickly to analyze.

I did learn that my host's name was William, that his father was a yeoman farmer, and that they were the only surviving members of their family. I also learned that the father had a feud with the local squire and that they were on their way to a fair. From an allusion to Bristol, I gathered that we were somewhere in the Southwest of England. From the look of the vegetation, I surmised that it was springtime.

The open fields and woodlots gave way to a straggle of small houses, and these thickened into a village. From the height of the dim, ruddy orb that passed for sun in England, I judged that the time was about midday,

On the edge of the village roared the fair. There were swarms of rustics, clad more or less like my father (for so I had come to think of him). There were a few ladies and gentlemen in more photogenic eighteenth-century attire, with high heels and powdered wigs. Some younger men, I noted, wore their own hair in pigtails instead of wigs. My father's beard, however, was the only one in sight.

When we got into the crowd, the stink of unwashed humankind was overpowering. Although I, who smelled with William's olfactory nerves, found it horrible, he seemed not to notice. I suppose he was pretty ripe himself. From the itches in various parts of his body, I suspected that he harbored a whole fauna of parasites.

Two teams were playing cricket. Beyond, young men were running and jumping in competition. There was a primitive merry-go-round, powered by an old horse. A boy followed the beast round and round, beating it to keep it moving. There were edibles and drinkables for sale; of the fairgoers, some were already drunk.

There were games of chance and skill: throwing balls and quoits at targets, guessing which walnut shell the pea was under, cards, dice, and a wheel of fortune. A row of tents housed human freaks and a large one, a camel. A cockfight and a puppet show, striving to outshout each other, were going on at the further end of the grounds.

My father would not let me squander of few pence on these diversions, but he paid tuppence for us to see the camel. This mangy-looking beast loftily chewed its cud while a man in an "Arab costume" made of old sheeting lectured on the camel's qualities. Most of what he said was wrong.

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"Hola there!" cried a voice. I — or rather the William whose body I shared — turned. One of the gentlemen was addressing us — a well-set-up man of middle years, with a lady on his arm.

"Stap me vitals," said this man, "If it beant old Phil!"

My father and I took off our hats and bowed. My father said, "God give you good day, Mayster Bradford! Good day, your la'ship! 'Tis an unexpected pleasure."

Bradford came up and shook my father's hand. "'Tis good for the optics to see you again, Philip. You, too, Will. Zookers, but ye've grown!"

"Aye, he's a good lad," said Philip. "The Earth hath zwallowed all my hopes but un."

"The Lord giveth and the Lord taketh away. Tell me, Phil, how goes it betwixt you and Sir Roger?"

"Ill enough," said my father. "E'er since the enclosure, he hath been at me to sell out me poor little patch to add to his grand acres."

"Why don't ye sell?" said Bradford. "I hear he hath offered a good price."

"Nay, zir, with all due respect, that I won't. Shirlaws ha' been there zince memory runneth not to the contrary, and I'll not be the virst to gi' it up. And if I did, 'twould not be to a titled villain who rides his vox hunt across me crops. Clean ruined last year's barley."

"Same stubborn old Phil! Roger Stanwyck's not so bad a cully if ye get on's good side. For all's glouting humors, he doth good works of charity." Bradford lowered his voice. "Harkee, Phil, we're old friends, and ne'er mind the distinctions o' rank. Sell out to Sir Roger for the best price ye can get, but quit this contention. Otherwise, I shan't be able to answer for your well-being. *Verbum sat sapienti.*"

"What mean ye, zir?"

"In's cups, which is oft enough, he boasts that he'll have your land or have you dancing on the nubbing cheat ere the twelve-month be out."

"Aye, zir?" said Philip.

"Aye verily, no question. I was there, at a party at Colonel Armitage's. Roger's the magistrate and can do't."

"He must needs ge' me dited and convicted virst."

"I' fackins, man, talk sense! With all the hanging offenses on the books, they can string you up for auft more heinous than spitting on the floor."

"Fie! Juries won't convict in such cases."

"If they happen to like you. I needn't tell you ye be not the most popular man hereabouts."

"Aye, Mayster Bradford, but wherefore? I lead a good Christian life."

"Imprimus, ye foft against the

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enclosure."

"Sartainly I did. 'Tis the doom o' the independent farmer."

"Me good Philip, the day of the old English yeoman is past. The country needs corn, and the only way to get it is to carve up all these wasteful commons and put 'em to grain crops. Secundus, ye are a Methodist, and to these folk that's worse nor a Papist or a Jew. They'd be tickled to see a wicked heretic swing, specially since we haven't had a hanging in o'er a year."

"I believe what the Almighty and the Good Book tell me."

"Tertius, ye wear that damned beard."

"I do but obey the divine commands, zir. Zee Leviticus nineteen."

"And quartus, ye are learned beyond your station. I don't mind; I like to see the lower orders better themselves — within reason, o' course. But the villagers think ye give yourself airs and hate you for't."

"I only strive to obey God the more wisely by me little larning. Zee Proverbs one, vifth verse. As for zelling out to Zir Roger, I'll come to the parish virst."

Bradford sighed and threw up his hands. "Well, say not that I failed to warn you. But, hark, if ye do sell, ye shall have a good place with me for the asking. 'Twon't be arra clodhopping chore, neither, but a responsible post with good pay. Ask me sarvents if I beant a good master."

"Well, thankee, zir, but —"

"Think it o'er," Bradford clapped Philip on the shoulder and went away with his wife.

We strolled about, bought a snack of bread and cheese, and watched the contests. William would have liked to spend money on the freak shows and the gambling games, but Philip sternly forbade. Then a shout brought us about.

"Hey, Shirlaw! Philip Shirlaw!"

We were addressed by a stout, red-faced man with a strip of gold lace on his three-cornered hat. He came swiftly towards us, poling himself along with a four-foot, gold-headed walking stick. With him was a gorgeously dressed young man, tall and slender. The young man carried his hat beneath his arm, because it could never have been fitted over his wig. This wig, besides the curls at the sides and the queue at the back, shot up in a foot-high pompadour in front.

The youth was as pale as the older one was ruddy and had black beauty spots glued to cheek and jaw. He languidly waved a pale slender hand as he spoke.

"I'll have a word with thee, sarrah," said the red-faced one.

"Aye, your honor?" replied Philip.

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"Not here, not here. Come to my house this afternoon — after dinner-time will do."

"Father!" said the youth. "You forget, Mr. Harcourt and's wife are dining with us." I noted that the young man dropped his final r's, like a modern Englishman, whereas the others with whom we had spoken did not.

"So he doth, so he doth," grumbled Sir Roger Stanwyck. "Make it within the hour, Shirlaw. We're about to depart the fair, so tarry not!"

It was a long walk back from the fair to Sir Roger's mansion, but the squire would never have thought to offer us a lift in his coach.

Stanwyck House so swarmed with servants that it was a wonder they did not fall over one another. One of them ushered us into Sir Roger's study. I had little chance to observe the surroundings, save as William's vision happened to light on things; and he had been here before. There was, for instance, a pair of swords crossed behind a shield on the wall — but all made of glass, not steel.

Sir Roger, wineglass in hand, glowered at us from a big wing chair, then put on a forced smile. His son, seated at a harpsichord and playing something by Handel, left off his strumming.

"Now, Shirlaw!" barked Sir Roger. "I have argued with thee and pleaded with thee, to no avail. Art a stubborn old fart; s'bud, I'll give thee credit. To show me heart's in the right place, I'll raise me last offer to a hundred guineas even. 'Tis thrice what thy lousy patch is worth and will set thee up for life. But that's all; not a brass farden more. What say ye? What say ye?"

"Zorry, zir," said Philip. "I ha' gi'en you mind answer, and that's that. Me land stays mine."

They argued some more, while the son patted yawns. Sir Roger got redder and redder. At last he jumped up, roaring:

"All right, get out, thou Hanoverian son of a bitch! I'll Methodist thee! If one method won't sarve, there's a mort more in me locker. Get out!"

"Your honor may kiss mind arse," said Philip as he turned away.

Behind us, Sir Roger hurled his wineglass at us but missed. The glass shattered, and Sir Roger screamed: "John! Abraham! Throw me these rascals out! Fetch me sword, somebody! I'll qualify them to run for the geldings' plate! Charles, ye mincing milksop, why don't ye drub me these runagates?"

"La, Father, you know that I —" began the young man. The rest was lost in the distance as Philip and William walked briskly out,

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before the hired help could organize a posse. Behind us, the clock struck four.

I was myself filled with rage, both from what I got from William's mind and on my own account. If I had been in charge of William's body, I might have tried something foolish. It is just as well that I was not. In those days, a peasant simply did not punch a knight or baronet (whichever Sir Roger was) in the nose, no matter what the provocation.

We left the grounds by another path, which led across a spacious lawn. At the edge of this lawn, the ground dropped sharply. There was a retaining wall, where the surface descended almost vertically for six or eight feet into a shallow ditch. From this depression, the earth slopped gently up on the other side, almost to the level on the inner lawn. This structure, like a miniature fortification, was called a ha-ha. Its purpose was to afford those in the house a distant, unobstructed grassy vista and at the same time keep the deer and other wild life away from the inner lawns and flower beds.

We descended a flight of steps, which cut through the ha-ha, and continued along a winding path. This path led over a brook and through a wood. On the edge of the brook, workmen were building a tea house in Chinese style, with red and black paint and gilding. As we followed the winding path through the wood, a rabbit hopped away.

"Hm," said Philip Shirlaw. "That o'erweening blackguard... And us wi' noft but bread and turnips in the house. Harkee, Will, Zir Roger dines at vive, doth he not?"

"Aye," said William. "'Twas vour, but that craichy zon o' his hath broft the new vashion vrom London."

"Well, now," said Philip, "Meseems that God hath put us in the way of a bit o' flesh to spice out regiment. Wi' guests at Stanwyck House, the Stanwycks'll be close to home from vive to nigh unto midnight. Those ungodly gluttons dawdle vive or zix hours o'er their meat, and the pack o' zarvents'll be clustered round to uphold Zir Roger's hospitality. By the time they're throf, Zir Roger'll be too drunk to know what betides."

"Dost plan to nab one o' his honor's coneys?"

"Aye, thof it an't Zir Roger's but God's."

"Oh, Vayther, have a care! Remember Mayster Bradford's warning—"

"The Almighty will take care of us."

Another half hour brought us to our own farm and house. The house was little more than a shack,

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not much above the level of the houses of comic-strip hillbillies. Furnishings were minimal, save that a shelf along one wall bore a surprising lot of books. This must be what Bradford had meant when he spoke of Philip Shirlaw's being learned above his station.

Since William did not fix his eyes on this shelf for more than a few seconds at a time, I could not tell much about Philip's choice of books. I caught a glimpse of several volumes of sermons by John Wesley and George Whitefield. There were also, I think, a Bible, a Shakespeare, and a Plutarch.

Philip Shirlaw climbed up into the loft and came down with a pair of small crossbows. I was astonished, supposing these medieval weapons to have been long obsolete. I later learned that they were used for poaching as late as the time of our adventure, being favored for their silence.

William unhappily tried again to dissuade his sire: "Don't let thy grudge against Zir Roger lead thee into risking out necks. Colonel Armitage's vootman, Jemmy Thorne, hath told me 'tis a hanging offense to 'trespass with intent to kill rabbits.' Them are the words o' the statute."

I followed the argument with growing apprehension. What would happen to me if William were killed while I shared his body?

But Philip Shirlaw was not to be swayed. "Pooh! Put thy trust in Providence, zon, and vear noft. Nor di I, as a good Christian, bear Zir Roger a grudge. I do but take my vair share o' the vruits o' the earth, which God hath provided for all mankind. Zee the ninth chapter o' Genesis."

The steel crossbow bolts were about the size of a modern pencil. With a pocket full of these and a crossbow under his arm, William set out behind his father.

They scouted the woods between the Stanwyck estate and the Shirlaw farm, seeing and hearing no one. The sun sank lower and disappeared behind the clouds, which thickened with a promise of rain.

As Philip had surmised, all the service personnel of Stanwyck House had gone to the mansion to wait upon the master and his guests.

At last — it must have been nearly six — we roused a rabbit, which went hippety-hoppity through the big old oaks. William made a quick motion, but Philip stayed him with a gesture. Carefully, they cocked their weapons, placed their bolts in the grooves, and scouted forward.

They raised the rabbit again, but again it bolted. Being old hands at this, they spread out and continued their stalk.

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The woods thinned, and they reached the edge of the outer lawns, not far from the ha-ha. In the depression that ran along the foot of the ha-ha sat their rabbit, nibbling.

Philip's crossbow twenged. The quarrel whined. The rabbit tumbled over.

"Got un!" said William.

The Shirlaws ran out from the woods to seize the game, when a bellow halted them. Atop the ha-ha stood Sir Roger Stanwyck and his son Charles. Sir Roger held a musket trained upon them; Charles, a pistol.

"Ha!" roared Sir Roger. "Said I not I'd have you? The divil set upon me if I don't see you twain dangling from the hempseed caudle!"

"O Gemini, they mean it!" muttered William. "Get ready to vlee!"

"Drop those crossbows!" came the high voice of Charles Stanwyck.

William's bow was still cocked and loaded. Without thinking, the young man whipped up the weapon and discharged it at Sir Roger. He missed, and the whistle of the bolt was drowned by the roar of the musket. I heard the ball strike Philip, who fell backwards with a piercing scream. William dropped his crossbow and ran for the woods.

Another flash lit up the evening landscape. The report came to William's ears just as a terrific blow struck him in the back...

And then I was back in Madame Nosi's room, on my feet but staggering back from the wall. About the floor lay the shattered remains of Balsamo's mirror. To my left lay my friend. Madame Nosi was not to be seen, but I had a dim memory of shrieks and crashes just before my "awakening."

I dashed to the head of the stair. At the foot, in an unlovely sprawl, lay Madame Nosi.

After a second's hesitation, I went back to the room. My friend was sitting up on the floor, mumbling: "What — what hath happened? I thought I was shot..."

"Come, help me!" I said. We descended to Madame Nosi.

"Pull her up," said my friend. "It's not decent for her to be lying upside down like that."

"Don't touch her!" I said. "Shouldn't move an injured person until the doctor comes." I felt for her pulse but found none.

A policeman appeared, followed by a couple of neighbors. The cop asked, "What goes on? What's the screaming and crashing — oh!" He sighted Fatima Nosi.

In due course, the ambulance came and took Madame Nosi. For the next few days, my friend and I spent hours answering questions by the coroner and other officials.

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As nearly as we could reconstruct the events, my friend and I had leaped out of our chairs at the moment when, in our eighteenth-century lives, we were shot by the Stanwycks. I had blundered into the wall and broken the mirror. Whether in sudden panic at the success of her spell, or for some other reason, Madame Nosi had run out of the room. She had died, not from the effects of the fall, as we at first supposed, but from heart failure before she fell. Her physician testified that she had suffered from heart disease.

The officials, although puzzled and suspicious, let us go. They swept up the fragments of Balsamo's mirror for "evidence," but I could never find out what became of the pieces. I had some vague idea of putting them together but let it go in the rush of cramming for spring finals. I suppose the pieces were thrown out with the trash.

When it was over, my friend sighed and said, "I fear me that the eighteenth century, which I have idealized all these years, never really existed. The real one was far dirtier, more narrow-minded, brutal, orthodox, and superstitious, than I could have ever conceived without seeing it. Gawd, to be cooped up in the body of a bewhiskered amateur theologian and not be able to say a word to controvert his fallacies! The eighteenth century I visualized was a mere artifact — a product of my imagination, compounded of pictures in books which I saw as a child, things I had read, and bits of Colonial architecture I've seen."

"Then," I asked, "you'll settle down and be reconciled to your own twentieth century?"

"Good heavens, no! Our experience — assuming it to be genuine and not a mere hallucination — only serves to convince me that the real world, anywhere or in any age, is no place for a gentleman of sensitivity. So I shall spend more time in the world of dreams. If you like, Willy, I shall be glad to meet you there. There's a palace of lapis lazuli I must show you, atop a mountain of glass..."

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ACROSTIC PUZZLE by Paul Novitski

This puzzle contains a quotation from a work of science fiction. First, guess as many of the clues as you can and write the word or words in the numbered blanks in the puzzle. (The end of a line in the diagram doesn't mean the end of a word.) If you have answered the clues correctly, you will see words forming in the puzzle blocks. Fill in the missing letters and put them in the numbered spaces opposite the clues. That will help you guess those words and therefore get more of the puzzle, and so on. The first letters of the correctly answered clues will spell out the name of the author and the title of the work from which the quotation is taken.

A. Far-sighted.
133 13 122 38 167 57 158 6 52

B. Inventor of an amplifier of muscular energy.
132 11 104 43 190 72 142 51

C. Aussie SF novel by Keith Smith
5 131 93

D. She was a bandit with one good arm, out to rob his soul. (Ellison)
143 36 125 10 28 114

E. Further from the source of a gravitational field.
155 22 102 37 183

F. Mean mercenaries (Herbert).
160 42 118 195 94 130 88 3 69

G. Mildred Broxon.
46 82 188 175 50 140

H. Catalog of permutations of event.
66 20 55 157 12 113

I. Telephone booth for chats with God.
185 7 101 78 25 164

J. Universal constant.
110 149 15 73 176 109

K. Real progress.
35 193 152 105 31 58 70

L. As clear as mud, it's Greek to me — you'd better ask Piers Anthony.
81 61 59 141 98 30

M. An apt description of obscure clues like this.
26 170 71 184 116 103 39 148 189 4 54

N. Author: "Of Mist, and Grass, and Sand."
173 87 145 90 153 21 49 8

O. It lacks dimension.
100 134 174 2 16

P. You should be familiar with Delany by now.
44 147 17 180

Q. A choice example of free will.
29 137 182 89 18 128

R. Michael Moorcock's surfboard.
120 62 77 144 129 24 65 40 95

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S. Precipice (U.S. Midlands Colloq.). 177 191 32 162 115

T. Author: "The Eternal Moment." 194 83 47 169 9 163 56 106 124

U. SF awards are a cloudy issue. 192 108 64 181 117 186 60

W. A non-equilateral, oblique-angled parallelogram. 168 96 161 179 151 92 74 107

X. She could only fly at night (Silverberg). 86 41 80 75 150 165 111

Y. Some welfare recipients would refute this claim. (Heinlein). 154 48 99 63 27 172 119 166 79

Z. This vast distance turns titanic suns to pinpricks. 97 112 67 187 171 135 146 45 156 34 123 14

AA. Two-dimensional visual art medium, first and second millenia A.D. 178 1 139 76

BB. He rules entire oceans from 2,700,500,000 miles away. 159 84 138 121 53 19 127

Answer will appear in the July issue.

COMING NEXT MONTH

Next month's feature is a new novella by Gregory Benford and Gordon Eklund, a sequel to their award-winning "If the Stars Are Gods." The title of the new story is THE ANVIL OF JOVE, and it is a suspenseful tale about an exploration team on an artificial satellite orbiting Jupiter and their effort to understand a puzzle that is almost certainly an alien message.

The July issue is on sale June 1.

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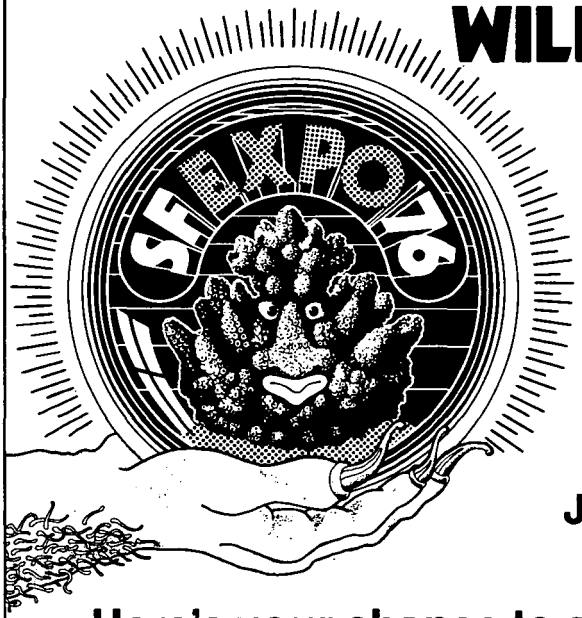

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